VOLUME 2

NEW YORK GATEWAY CONNECTIONS IMPROVEMENT PROJECT TO THE US PEACE BRIDGE PLAZA

Final Design Report/Environmental Impact Statement

Final Section 4(f) Evaluation (49 USC 303)

APPENDIX A – PLANS AND PROFILES

PIN 5760.80 City of Buffalo Erie County, New York

April 4, 2014





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1. Design Criteria

		Crit	ical Design Elements	for I-190		
PIN:		5760.80		NHS (Y/N):	Yes	
	No. & Name:	I-190 Niagara Thruway		Functional Classification:	Urban Principal Arterial Interstate	
_	t Type:	Reconstruction		Design Classification:	Interstate	
% Truc		8%		Terrain:	Rolling	
ADT (2	2040):	111200		Truck Access/Qualifying:	Qualifying Highway	
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE	
1	Design Speed ⁸	60 mph	60 mph	60 mph	HDM § 2.7.1.1.A	
2	Travel Lane width (min)	12.0 ft.	12.0 ft.	12.0 ft.	HDM § 7.6.3.1 HDM Exhibit 7-10	
3	Shoulder Width (min) ²	Left - 4.0 ft. Right - 10.0 ft.	Varies 3.5 ft. to 4.3 ft.** Varies 5.5 ft. to 10.5 ft.**	Varies 3.5 ft. to 4.3 ft.** Varies 5.5 ft. to 10.5 ft.**	HDM § 7.6.3.1 HDM Exhibit 7-10	
4	Bridge Roadway Width	Same as travelway	4-12 ft. lanes	4-12 ft. lanes	NYSDOT Bridge Manual	
_	Mariana Grada	4.00/	(77.4 ft. overall)**	(77.4 ft. overall)**	§ 2.3.1 HDM § 7.6.3.1	
5	Maximum Grade	4.0% 1263 ft.	3.0%	3.0%	HDM Exhibit 7-10	
6	Minimum Radius	1263 π. (@ 6.0% SE)	1698 ft	1698 ft	HDM § 7.6.3.1 HDM Exhibit 7-10	
7	Superelevation	6% (max.)	6.0%	6.0%	HDM § 7.6.3.1 HDM Exhibit 7-10	
8	Stopping Sight Distance (min)	475 ft.	517 ft.	517 ft.	HDM Exhibit 2-2	
9	Horizontal Clearance Without barrier With barrier	15.0 ft. Greater of shoulder width or 4.0 ft.	10.5 ft.** Varies ≥ 3.5 ft.**	10.5 ft.** Varies ≥ 3.5 ft.**	HDM § 2.7.1.1.I	
		16.0 ft. (min)	at Porter Ave: 16.13	at Porter Ave: 16.15	NYSDOT Bridge Manual	
10	Vertical Clearance ^{3, 7}	16.5 ft.(desired)	at Ramp B: 14.53 ft** at Shoreline Trl: NA	at Ramp B: 14.53 ft** at Shoreline Trl: 17.5 ft	§ 2.4.1	
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.1.1.K	
12	Max Rollover ⁴ Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.1.1.L	
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.6.1	
14	Level of Service	C (min.); conditions may necessitate D	D (NB); D (SB) ⁵	F*(NB); F*(SB) ⁶	HDM § 2.7.5.2.0	
15	Control of Access	Full	Full	Full	HDM § 2.7.1.1.0	
16	Median Width ²	4.0 ft.	Varies 6.0 ft. to 11.0 ft.	Varies 6.0 ft. to 11.0 ft.	HDM § 7.6.3.1 HDN Exhibit 7-10	

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Minimum Median consists of two 1.0 ft left shoulders and a 2.0 ft wide median barrier (Standards of the day)
- 3. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 4. When the maximum superelevation rate exceeds 6%, a maximum rollover rate of 10% at the edge of the traveled way may be permitted.
- 5. In the 3 lane section north of Interchange 9, the existing LOS northbound is F.
- 6. In the 3 lane section south of Interchange 6, the existing LOS southbound is E.
- 7. The Ramp B over I-190 structure is one of those on the listing of structures in Appendix 2C of the NYSDOT Bridge Manual whose existing clearance can be retained as agreed by FHWA on December 12, 1991.
- 8. The Regional Traffic engineer has concurred that the use of a design speed of 60 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

	Critical Design Elements for Ramp N ⁴							
	A 14+50 to A 29+00							
PIN:	PIN: 5760.80 NHS (Y/N): No							
	No. & Name:	Ramp N		Functional Classification:	Urban Principal Arterial Other			
	ct Type:	Reconstruction		Design Classification:	Ramp (Diagonal)			
% Tru		14%		Terrain:	Rolling			
ADT (2		22800		Truck Access/Qualifying:	Qualifying Highway			
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE			
1	Design Speed⁵	35 mph	35 mph	35 mph	HDM § 2.7.5.2.A			
2	Travel Lane width (min)	26 ft. (2-13 ft. lanes)	24 ft.	26.0 ft. (2-13 ft. lanes)	HDM § 2.7.5.2.B Exhibit 2-9a			
3	Shoulder Width:	Left - 3.0 ft. Right - 6.0 ft.	varies 0 to 10 ft.* varies 4 to 13 ft.*	3.0 ft. 6.0 ft.	HDM Exhibit 2-10			
4	Bridge Roadway Width	Same as travelway (2- 24 ft lanes, 34 ft wide overall,)	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.3.1			
5	Maximum Grade	6.0%	2.0%	4.4%	HDM Exhibit 2-10			
6	Minimum Radius	340 ft (@ 6.0% SE)	503 ft.	687 ft.	HDM Exhibit 2-10			
7	Superelevation	6% (max.)	6% (max.)	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G			
8	Stopping Sight Distance (min)	250 ft.	N/A	250 ft.	HDM Exhibit 2-10			
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	6.0 ft. 2.5 ft.*	3.0 ft. 6.0 ft.	HDM § 2.7.5.2.I			
10	Vertical Clearance ³	16.0 ft. (min.) 16.5 ft. (desired)	Porter Ave 16.15 ft. Ramp P - 15.42 ft.**	16.15 ft. 15.42 ft. ³ **	NYSDOT Bridge Manual § 2.4.1			
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.5.2.K			
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L			
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	N/A	N/A	NYSDOT Bridge Manual § 2.6.1			
14	Level of Service	C (min.); conditions may necessitate D	E*	С	HDM § 2.7.5.2.N			
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0			
16	Pedestrian Accommodations	N.A.	N/A	N/A	HDM § 2.7.5.2.P			

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 3. This structure is one of those on the listing of structures in Appendix 2C of the NYSDOT Bridge Manual whose existing clearance can be retained as agreed by FHWA on December 12, 1991.
- 4. Design Criteria for Ramps N & A were established using the criteria applicable to the adjacent operational conditions. As Ramp N exits the I-190 the design condition is an expressway ramp but as the ramp extends north of the Ramp P bridge and transitions to Ramp A conditions change to Urban Arterial Other with Non-expressway Ramp or Free Flow Turning Roadway. The operational conditions than continue to change as Ramp A transitions to the low speed travel present in the PBA Plaza. The changes in Design Criteria follow the transitions
- 5. The Regional Traffic engineer has concurred that the use of a design speed of 35 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

0 11 12 1 51 1 6 2 1 1 1 4							
	Critical Design Elements for Ramp N / Ramp A Overlap with Shoulders ⁴ Sta A 29+00 to A 33+25						
PIN:		5760.80	31a A 23+00 10 A 33+	NHS (Y/N):	Yes		
	No. & Name:	Ramp A		Functional Classification:	Urban Principal Arterial Other		
	t Type:	Reconstruction		Design Classification:	Free Flow Turning Roadway		
6 Truc		14%		Terrain:	Rolling		
	2040):	22800		Truck Access/Qualifying:	Qualifying Highway		
	10-10-11	22800		Track / toccss/ Qualitying.	Quality in grid in gri		
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE		
1	Design Speed ^{2, 5}	35 mph	35 mph	35 mph	HDM § 2.7.5.2.A		
2	Travel Lane widths: Single lane Two Lanes	12.0 ft. 2 - 12.0 ft. (R=>1000 ft.)	12.0 ft.	12.0 ft.	HDM § 2.7.5.2.B Exhibit 2-9b (case IIC) Exhibit 2-9b (case IIIC)		
3	Shoulder Width (min)	Left - 3.0 ft. Right - 6.0 ft.	1.4 ft.* 1.2 ft. (curb offset)	3.0 ft. 6.0 ft.	HDM Exhibit 2-10		
4	Bridge Roadway Width	Same as travelway (3 - 12 ft lanes, 45 ft wide overall,)	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.3.1		
5	Maximum Grade	6.0%	3.5%	4.4%	HDM Exhibit 2-10		
6	Minimum Radius	340 ft. (@ 6.0% SE)	1540 ft.	1027 ft.	HDM Exhibit 2-10		
7	Superelevation	6% (max.)	6% (max.)	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G		
8	Stopping Sight Distance (min)	250 ft.	360 ft.	334 ft.	HDM Exhibit 2-10		
9	Horizontal Clearance (min)	Left - 3.0 ft Right - greater of shld. width or 6.0 ft	2.3 ft.* 9.0 ft.	Left - 3.0 ft. Right - 6.0 ft.	HDM § 2.7.5.2.I		
10	Vertical Clearance ³	16.0 ft. (min) 16.5 ft. (desired)	Unlimited	Unlimited	NYSDOT Bridge Manual § 2.4.1		
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.5.2.K		
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L		
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.6.1		
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0		
16	Pedestrian Accommodations	N/A	N/A	N/A	HDM § 2.7.5.2.P		

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Connection from Ramp N (40 mph) to Peace Bridge Plaza
- 3. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 4. Design Criteria for Ramps N & A were established using the criteria applicable to the adjacent operational conditions. As Ramp N exits the I-190 the design condition is an expressway ramp but as the ramp extends north of the Ramp P bridge and transitions to Ramp A conditions change to Urban Arterial Other with Non-expressway Ramp or Free Flow Turning Roadway. The operational conditions than continue to change as Ramp A transitions to the low speed travel present in the PBA Plaza. The changes in Design Criteria follow the transitions
- 5. The Regional Traffic engineer has concurred that the use of a design speed of 35 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)

	Critical Design Elements for Ramp A with Curb ⁴						
			Sta 33+25 to Sta 37+	·50			
PIN:		5760.80		NHS (Y/N):	Yes		
Route	No. & Name:	Ramp A		Functional Classification:	Urban Principal Arterial Other		
Projec	t Type:	Reconstruction		Design Classification:	Free Flow Turning Roadway		
% Tru		14%		Terrain:	Rolling		
ADT (2	2040):	22800		Truck Access/Qualifying:	Qualifying Highway		
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE		
1	Design Speed ^{2, 5}	25 mph	25 mph	25 mph	HDM § 2.7.5.2.A		
2	Travel Lane widths: Single Lane (curbs) Two Lane (curbs w/ 1.0' offset, 32'/2 lanes)	23.0 ft. 16.0 ft. (R=150 ft.)	16.0 ft.	48.0 ft. (3-16 ft. lanes)	HDM § 2.7.5.2.B Exhibit 2-9b (case IIC) Exhibit 2-9b (case IIC) Exhibit 2-9b (case IIIC)		
3	Curb Offset	2.0 ft Desirable 0.0 ft Minimum	Left - 1.4 ft. Right- 1.2 ft.	Left/Right - 1.0 ft.	HDM Exhibit 2-10		
4	Bridge Roadway Width	Same as travelway (three 16 ft lanes, 52 ft wide overall,)	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.3.1		
5	Maximum Grade	7.0%	3.5%	3.7%	HDM Exhibit 2-10		
6	Minimum Radius	144 ft. (@ 6.0% SE)	180.0 ft.	172 ft.	HDM Exhibit 2-10		
7	Superelevation	6% (max.)	6% (max.)	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G		
8	Stopping Sight Distance (min)	155 ft.	360 ft.	334 ft.	HDM Exhibit 2-10		
9	Horizontal Clearance (min) w/ curb	1.5 ft. behind curb min. 3.0 ft. behind curb @ Intsec.	2.0 ft. 3.0 ft.	Left - 1.0 ft. ⁶ Right - 3.0 ft.	HDM § 2.7.5.2.I		
10	Vertical Clearance ³	16.0 ft (min) 16.5 ft (desired)	Unlimited	Unlimited	NYSDOT Bridge Manual § 2.4.1		
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.5.2.K		
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L		
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.6.1		
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0		
16	Pedestrian Accommodations	N/A	N/A	N/A	HDM § 2.7.5.2.P		

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Connection from Ramp N (40 mph) to Peace Bridge Plaza
- 3. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 4. Design Criteria for Ramps N & A were established using the criteria applicable to the adjacent operational conditions. As Ramp N exits the I-190 the design condition is an expressway ramp but as the ramp extends north of the Ramp P bridge and transitions to Ramp A conditions change to Urban Arterial Other with Non-expressway Ramp or Free Flow Turning Roadway. The operational conditions than continue to change as Ramp A transitions to the low speed travel present in the PBA Plaza. The changes in Design Criteria follow the transitions
- 5. The Regional Traffic engineer has concurred that the use of a design speed of 25 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- 6. Horizontal clearance on the left side of travelway is a 1'-0" offset to front face of a 2'-0" concrete barrier.
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

	Cuitical Design Floresents for Domer N. Futomaiou ³						
	Critical Design Elements for Ramp N Extension ³ N 13+00 to N 28+00						
		I	N 15+00 to N 26+00				
PIN:		5760.80		NHS (Y/N):	No		
	No. & Name:	Ramp N Extension		Functional Classification:	Urban Principal Arterial Other		
	t Type:	Reconstruction		Design Classification:	Free Flow Turning Roadway		
% Truc ADT (2	CKS:	5%		Terrain:	Rolling		
ADI (2	:040):	6500		Truck Access/Qualifying:	Qualifying Highway		
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE		
1	Design Speed ⁴	30 mph	30 mph	30 mph	HDM § 2.7.5.2.A		
2	Travel Lane width (min)	12 ft.	12 ft.	24.0 ft. (2-12 ft. lanes)	HDM § 2.7.5.2.B Exhibit 2-9b		
3	Shoulder Width:	Left - 3.0 ft. Right - 6.0 ft.	varies 0 to 10 ft.** varies 4 to 13 ft.**	varies 2 to 4 ft. ** varies 2 to 6 ft. **	HDM Exhibit 2-10		
4	Bridge Roadway Width	Same as travelway (3.0 ft .+ 15.0 ft. + 6.0 ft.)	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.3.1		
5	Maximum Grade	7.0%	2.0%	5.4%	HDM Exhibit 2-10		
6	Minimum Radius	231 ft. (@ 6.0% SE)	1027 ft.	1343 ft.	HDM Exhibit 2-10		
7	Superelevation	6% (max.)	6% (max.)	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G		
8	Stopping Sight Distance (min)	200 ft.	N/A	259 ft.	HDM Exhibit 2-10		
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	6 ft. 2.5 ft. *	2.0 ft.* 2.0 ft.**	HDM § 2.7.5.2.I		
10	Vertical Clearance	16.0 ft. (min.) 16.5 ft. (desired)	Ramp B - 14.917 ft.* Ramp D - N/A	16.83 ft. 16.0 ft.	NYSDOT Bridge Manual § 2.4.1		
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.5.2.K		
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L		
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	N/A	N/A	NYSDOT Bridge Manual § 2.6.1		
14	Level of Service	C (min.); conditions may necessitate D	E*	С	HDM § 2.7.5.2.0		
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0		
16	Pedestrian Accommodations	N.A.	N/A	N/A	HDM § 2.7.5.2.P		

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 3. Design Criteria for Ramps N & A were established using the criteria applicable to the adjacent operational conditions. As Ramp N exits the I-190 the design condition is an expressway ramp but as the ramp extends north of the Ramp P bridge and transitions to Ramp A conditions change to Urban Arterial Other with Non-expressway Ramp or Free Flow Turning Roadway. The operational conditions than continue to change as Ramp A transitions to the low speed travel present in the PBA Plaza. The changes in Design Criteria follow the transitions
- 4. The Regional Traffic engineer has concurred that the use of a design speed of 30 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

	Critical Design Elements for Ramp C						
	Sta. C 21+92 to C 27+00						
PIN:		5760.80	ta. 0 21 · 92 to 0 27 · 0	NHS (Y/N):	Yes		
Route	No. & Name:	Ramp C		Functional Classification:	Urban Principal Arterial Other		
Projec	t Type:	Reconstruction		Design Classification:	Free Flow Turning Roadway		
% Truc	cks:	<1%		Terrain:	Rolling		
ADT (2	2040):	850 (No-Build); 3400 (Build)		Truck Access/Qualifying:	Within 1 mile of Qualifying Highway		
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE		
1	Design Speed ^{2, 4}	30 mph	not posted (< 30 mph)	30 mph	HDM § 2.7.5.2.A		
2	Travel Lane width (min)	12 ft.	Varies 12.0 ft to 15.9 ft.	12.0 ft.	HDM § 2.7.5.2.B Exhibit 2-9b (case IIC) may reduce 12' if R >1000'		
3	Shoulder Width:	Left - 3.0 ft. Right w/ curb- 0 ft. (min.)	Varies 3.0 ft. to 8.5 ft. Varies 4.6 ft. to 12.8 ft.*	varies 3.0 to 5.0 ft. 2.0 ft.	HDM Exhibit 2-10,		
4	Bridge Roadway Width	Same as travelway (one 12 ft lane, 22 ft wide overall,)	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.3.1		
5	Maximum Grade	7.0%	6.0%	1.9%	HDM Exhibit 2-10		
6	Minimum Radius ²	231 ft. (6.0% SE)	900 ft.	1100 ft.	HDM Exhibit 2-10		
7	Superelevation	6% (max.)	unknown	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G		
8	Stopping Sight Distance (min)	200 ft.	>200 ft.	231 ft.	HDM Exhibit 2-10		
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	3.0 ft. 4.6 ft.*	3.0 ft. 6.0 ft.	HDM § 2.7.5.2.I		
10	Vertical Clearance	16.0 ft (min) 16.5 ft (desired)	Unlimited	Unlimited	NYSDOT Bridge Manual § 2.4.1		
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2.0%	2.0%	HDM § 2.7.5.2.K		
eneral	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L		
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	No Bridge	No Bridge	NYSDOT Bridge Manual § 2.6.1		
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0		
16	Pedestrian Accommodations	N/A	N/A	N/A	HDM § 2.7.5.2.P		

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Design speed and minimum Radius Criteria are shown for the Ramp Proper. These criteria do not pertain to the ramp terminal. In this case the entrance to Ramp C from the plaza is configured for the slow moving traffic (15 mph) exiting the custom's inspection area after coming to a full stop for the inspection process.
- 3. Lane width at the beginning of the Ramp Proper (sta 22+00) is 23.0 ft to accommodate truck turning movements
- 4. The Regional Traffic engineer has concurred that the use of a design speed of 30 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- * Non-Standard Feature

	Cuitical Decima Flamenta for Barra D						
	Critical Design Elements for Ramp D						
PIN:		5760.80	ca. D 8+60 to D 24+00	NHS (Y/N):	Yes		
	No. & Name:	Ramp D		Functional Classification:	Urban Principal Arterial Other		
	t Type:	New construction		Design Classification:	Ramp (direct connection)		
% Truc		7%		Terrain:	Rolling		
ADT (2		2800		Truck Access/Qualifying:	Qualifying Highway		
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE		
1	Design Speed ^{2, 5}	40 mph	New Ramp	40 mph	HDM § 2.7.5.2.A		
2	Travel Lane width (min)	15.0 ft.	New Ramp	15.0 ft.	HDM § 2.7.5.2.B Exhibit 2-9a (one lane)		
3	Shoulder Width:	Left - 3.0 ft. Right - 6.0 ft.	New Ramp	3.0 ft. 6.0 ft.	HDM Exhibit 2-10		
4	Bridge Roadway Width	Same as travelway	New Ramp	15 ft /24 ft. overall	NYSDOT Bridge Manual § 2.3.1		
5	Maximum Grade	6.0%	New Ramp	5.7%	HDM Exhibit 2-10		
6	Minimum Radius ²	485 ft. (@ 6.0% SE)	New Ramp	607.50 ft.	HDM Exhibit 2-10		
7	Superelevation	6% (max.)	New Ramp	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G		
8	Stopping Sight Distance (min)	305 ft.	New Ramp	317 ft.	HDM Exhibit 2-10		
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	New Ramp	3.0 ft. 6.0 ft.	HDM § 2.7.5.2.I		
10	Vertical Clearance ³	16.0 ft. (min) 16.5 ft. (desired)	New Ramp	Unlimited	NYSDOT Bridge Manual § 2.4.1		
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	New Ramp	2.0%	HDM § 2.7.5.2.K		
eneral	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	New Ramp	4.0% max 8.0% max	HDM § 2.7.5.2.L		
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	New Ramp	AASHTO HL-93 & NYS design permit vehicle	NYSDOT Bridge Manual § 2.6.1		
14	Level of Service	C (min.); conditions may necessitate D	New Ramp	F ⁴	HDM § 2.7.5.2.N		
15	Control of Access	Full	New Ramp	Full	HDM § 2.7.5.2.0		
16	Pedestrian Accommodations	N.A.	New Ramp	N/A	HDM § 2.7.5.2.P		

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Design speed and minimum Radius Criteria are shown for the Ramp Proper. These criteria do not pertain to the ramp terminal. In this case the entrance to Ramp D from the plaza is configured for the slow moving traffic (15 mph) exiting the custom's inspection area after coming to a full stop for the inspection process.
- 3. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 4. LOS F occurs at the I-190 northbound merge.
- 5. The Regional Traffic engineer has concurred that the use of a design speed of 40 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- 6. The Ramp D entrance has been widened to accommodate the turning movement for trucks exiting the Peace Bridge Plaza. The maximum width of 39 feet at station D 7+60 tapers to meet the proposed travel Lane width of 16.0 feet at station D 9+00.
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

Critical Design Elements for Ramp P						
DINI		5760.80	Design Liements for		Vec	
PIN:	No. & Name:	Ramp P		NHS (Y/N): Functional Classification:	Yes	
	t Type:	Reconstruction		Design Classification:	Urban Principal Arterial Interstate Ramp (diagonal)	
% True	•••	3%		Terrain:	Rolling	
ADT (2		8000		Truck Access/Qualifying:	Qualifying Highway	
, .D. (.	-0 10 1	8000		Track / teecss/ Qualitying.	Quantying riighway	
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE	
1	Design Speed ^{2, 4}	35 mph	not posted (< 30 mph)	35 mph	HDM § 2.7.5.2.A	
2	Travel Lane width (min)	15.0 ft. (R= 800 ft.)	15.5 ft.	15.5 ft.	HDM § 2.7.5.2.B Exhibit 2-9a	
3	Shoulder Width:	Left - 3.0 ft. Right - 6.0 ft.	varies 3.0 to 6.0 ft. varies 6.0 to 10.0 ft.	3.0 ft. 6.0 ft.	HDM Exhibit 2-10	
		Same as travelway			NYSDOT Bridge Manual	
4	Bridge Roadway Width	(one 15 ft. lane, 24 ft. wide overall,)	24.5 ft.	24.5 ft. (exist. bridge)	§ 2.3.1	
5	Maximum Grade	6.0%	2.0%	2.3%	HDM Exhibit 2-10	
6	Minimum Radius ²	340 ft. (@ 6.0% SE)	350 ft.	414 ft.	HDM Exhibit 2-10	
7	Superelevation	6% (max.)	4.5%*	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G	
8	Stopping Sight Distance (min)	250 ft.	> 200 ft.	261 ft.	HDM Exhibit 2-10	
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	6.0 ft. 10 ft.	3.0 ft. 6.0 ft.	HDM § 2.7.5.2.I	
10	Vertical Clearance	16.0 ft (min) 16.5 ft (desired)	Unlimited	Unlimited	NYSDOT Bridge Manual § 2.4.1	
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2%	2.0%	HDM § 2.7.5.2.K	
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L	
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	Unknown	Unknown ³	NYSDOT Bridge Manual § 2.6.1	
14	Level of Service	C (min.); conditions may necessitate D	E**	F**	HDM § 2.7.5.2.N	
15	Control of Access	Full	Full	Full	HDM § 2.7.5.2.0	
16	Pedestrian Accommodations	N/A ⁵	N/A ⁵	N/A	HDM § 2.7.5.2.P	

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Design speed and minimum radius criteria are shown for the Ramp Proper. These criteria do not pertain to the ramp terminal. In this case the entrance to Ramp P is configured for the slow moving traffic turning from Porter Avenue. The departure radius is 100 ft.
- 3. The structure is not slated for rehabilitation/replacement under this contract and is outside the work limits of Ramp P.
- 4. The Regional Traffic engineer has concurred that the use of a design speed of 35 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- 5. There are no existing sidewalks along Ramp P however crosswalks are present for the sidewalks along Porter Ave. No Crosswalks are included as part of the Proposed Condition.
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

		Critical I	Design Elements for F	Ramp PN	
PIN:		5760.80		NHS (Y/N):	Yes
	No. & Name:	Ramp PN		Functional Classification:	Urban Principal Arterial Other
	t Type:	New Construction		Design Classification:	Free Flow Turning Roadway
% Tru		4%		Terrain:	Rolling
ADT (2		7400		Truck Access/Qualifying:	Within 1 mile of Qualifying Highway
Ì	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE
1	Design Speed ⁴	30 mph	New Ramp	30 mph	HDM § 2.7.5.2.A
2	Travel Lane width (min)	15.0 ft. (R= 300 ft.)	New Ramp	16.0 ft.	HDM § 2.7.5.2.B Exhibit 2-9b
3	Shoulder Width:	Left - 3.0 ft. Right - 6.0 ft.	New Ramp	3.0 ft. 6.0 ft.	HDM Exhibit 2-10
4	Bridge Roadway Width	Same as travelway (one 15 ft. lane, 24 ft. wide overall,)	New Ramp	No bridge	NYSDOT Bridge Manual § 2.3.1
5	Maximum Grade	7.0%	New Ramp	3.9%	HDM Exhibit 2-10
6	Minimum Radius	231 ft. (@ 6.0% SE)	New Ramp	250 ft. ³	HDM Exhibit 2-10
7	Superelevation	6% (max.)	New Ramp	6% (max.)	HDM Exhibit 2-10 HDM § 2.7.5.2.G
8	Stopping Sight Distance (min)	200 ft.	New Ramp	203 ft.	HDM Exhibit 2-10
9	Horizontal Clearance (min)	Left - 3.0 ft. Right - greater of shld. width or 6.0 ft.	New Ramp	Left - 3.0 ft. Right - 6.0 ft.	HDM § 2.7.5.2.I
10	Vertical Clearance ²	16.0 ft. (min) 16.5 ft. (desired)	New Ramp	Unlimited	NYSDOT Bridge Manual § 2.4.1
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	New Ramp	2.0%	HDM § 2.7.5.2.K
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.5.2.L
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	New Ramp	No Bridge	NYSDOT Bridge Manual § 2.6.1
15	Control of Access	Full	New Ramp	Full	HDM § 2.7.5.2.0
16	Pedestrian Accommodations	N/A	New Ramp	N/A	HDM § 2.7.5.2.P

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (17.0' min. & 17.5' desirable)
- 3. Minimum radius of ramp does not include the departure radius at Porter Avenue
- 4. The Regional Traffic engineer has concurred that the use of a design speed of 30 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume. (Refer to section 2.3.1.5 speeds and delays and Appendix B of this report for additional information on speed data)
- * Non-Standard Feature

	Critical Design Elements for Porter Avenue					
PIN:		5760.80	8	NHS (Y/N):	No	
Route No. & Name:		Porter Ave.		Functional Classification:	Urban Principal Arterial Other	
Project Type:		Reconstruction		Design Classification:	Urban Arterial	
% Trucks:		3%		Terrain:	Rolling	
ADT (16000		Truck Access/Qualifying:	Within 1 mile of Qualifying Highway	
DESIGN ELEMENT		STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE	
1	Design Speed ²	30 mph	30 mph	30 mph	HDM § 2.7.2.2.A	
_	Travel Lane width 5	12.0 ft.	10.0 ft.**	10.0 ft.*	HDM § 2.7.2.2.B	
2	Turn Lane width (min.)	11.0 ft.	10.0 ft.*	N/A	(HDM Exhibit 2.4)	
_		0 ft. to 4.0 ft. (min.)	Left - 1.5 ft.	Left - 2.0 ft.	HDM § 2.7.2.2.C	
3	Shoulder Width:	with multi-use path	Right - 1.5 ft.	Right - 2.0 ft.	(HDM Exhibit 2.4)	
4	Bridge Roadway Width	Same as travelway	49.5 ft.	2-12 ft. lanes (57 ft. overall)	NYSDOT Bridge Manual § 2.3.1	
5	Maximum Grade	9.0%	2.0%	4.7%	HDM § 2.7.2.2.D (HDM Exhibit 2.4)	
6	Minimum Radius	250 ft. (@ 4.0% SE)	> 250 ft.	tangent section	HDM Exhibit 2-4	
7	Maximum Superelevation	4.0%	4.0%	4.0%	HDM § 2.7.2.2.G	
8	Stopping Sight Distance (min)	200 ft.	> 200 ft.	218.5 ft.	HDM Exhibit 2-4	
	Horizontal Clearance	0 ft. with barrier	N/A	N/A		
9	(from face of curb)	1.5 ft. without barrier	2.0 ft.	2.0 ft.	HDM § 2.7.2.2.I	
		3 ft. at intersections	3.0 ft.	3.0 ft.		
10	Vertical Clearance ³	14.0 ft. (min) 14.5 ft. (desired)	Unlimited	Unlimited	NYSDOT Bridge Manual § 2.4.1	
11	Pavement Cross Slope (min) / (max)	1.5% / 2.0%	2%	2.0%	HDM § 2.7.2.2.K	
12	Max Rollover Between Lanes Between EP/Shld.	4.0% max 8.0% max	4.0% max 8.0% max	4.0% max 8.0% max	HDM § 2.7.2.2.L	
13	Structural Capacity	AASHTO HL-93 & NYS design permit vehicle	Unknown	Unknown	NYSDOT Bridge Manual § 2.6.1	
16	Pedestrian Accommodations	5.0 ft. (both sides)	5.0 ft. (both sides)	N/A	HDM § 2.7.2.2.N (refer to HDM ch. 18)	

- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. The Area Character has been identified as Central Business District.
- 3. Vertical clearance for Pedestrian bridges shall be 1.0 ft greater (15.0' min. & 15.5' desirable)
- 4. The Regional Traffic engineer has concurred that the use of a design speed of xx mph is consistent with the anticipated off-peak 85th percentile speed
- 5. Roadway is within 1.0 mile of Qualifying Highway, Minimum Lane width is 12.0 feet (HDM Sect. 2.5.3.2)
- * Non-Standard Feature
- ** Non-Standard Feature (Existing and Proposed)

	Design Pa	rameters for Po	rter Avenue Round	labout	
PIN:	5760.80		Design Classification:	Urban Arterial	
Route No. & Name:	Porter Ave		Terrain:	Rolling	
Project Type:	Reconstruction		Truck Access/Qualifying:		
		Porter Avenue	I-190		Porter Avenue
Element	Parameter ^(1&2)	East Bound	Entrance	Entrance	West Bound
			Ramp P	Ramp PN	
Max. Entry Speed < 25 mph	Entry Path Radius Method (Per Equation 6.3) ⁽³⁾	24 mph	NA	NA	24 mph
Entry Width	12' – 23' 16'-20' typical	14 ft.	NA	NA	14 ft.
Entry Radius	65' – 150' 90'-110' typical	150 ft.	NA	NA	150 ft.
Approach Stopping Sight Distance	Per Section 6.7.3	OK	NA	NA	ОК
Circulating Roadway Sight Distance	Per Section 6.7.3	ОК			
Intersection Sight Distance	Per Section 6.7.3	OK	ОК	ОК	ОК
Circulatory Roadway Width	12' – 23' 16' – 20' typical	20 feet			
Min. Exit Radius ⁽⁴⁾	65′ to ∞ 400′ – 800′ typical	150 ft.	120 ft.	∞ (Tangent)	150 ft.
Pedestrian Accommodations	Compliance HDM Ch. 18 & NCHRP 672	Pedestrian accommodations are not included A separate pedestrian path is provided.			

- (1) Parameters per NCHRP Report 672, 'Roundabouts: An Informational Guide (2nd Edition)', and/or Main Office Intersection Design Squad, as applicable.
- (2) Section numbers listed in the table above refer to NCHRP Report 672, 'Roundabouts: An Informational Guide (Second Edition)'
- (3) Equation 6-3 on page 6-58 incorrectly contains an addition sign (+) as an operator. The correct operator should be a subtraction sign (-).
- (4) Exit radius is measured along the right curb line at exit.

Key:

Not typical, desired, &/or preferred, but within general range of acceptance

(highlight yellow)

		Critical Design Ele	ements for Shoreline	Trail (Riverwalk)	
PIN:		5760.80		NHS (Y/N):	No
Route No. & Name: Project Type:		Riverwalk		Functional Classification:	Bikeway/Multi-use Path
		Reconstruction		Design Classification:	Bikeway/Multi-use Path
% Tru	cks:	none	1	Terrain:	Rolling
ADT (2040):	N/A		Truck Access/Qualifying:	N/A
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE
1	Design Speed ³	18 mph	18 mph	18 mph	AASHTO ² (section 5.2.4)
2	Travel Lane width (min)	10.0 ft.	varies 10.0 ft. to 14.0 ft.	13.0 ft.	AASHTO ² (section 5.2.1)
3	Shoulder Width:	2.0 ft.	varies 2 ft. to 4 ft.	2.0 ft.	AASHTO ² (section 5.2.1)
4	Bridge Roadway Width	12.0 ft.	12.5 ft.	13	NYSDOT Bridge Manual § 2.3.1
5	Maximum Grade	5.0%	unknown	5.0%	AASHTO ² (section 5.2.7)
6	Minimum Radius	60 ft. no SE	36 ft.*	37 ft.*	AASHTO ² (table 5-2)
7	Maximum Superelevation	2.0%	Unknown	NC	AASHTO ²
8	Stopping Sight Distance (min)	165 ft.	Unknown	187 ft.	AASHTO ² (section 5.2.8)
9	Horizontal Clearance (min)	2.0 ft.	2.0 ft.	2.0 ft.	AASHTO ² (section 5.2.1)
10	Vertical Clearance	8.0 ft. (min) 10.0 ft. (desired)	Unknown	Unlimited	AASHTO ² (section 5.2.10)
11	Pavement Cross Slope (min) / (max)	2.0%	2.0%	2.0%	AASHTO ² (section 5.2.6)
13	Structural Capacity	0.090 ksf Pedestrian Load H10 design vehicle	New Ramp	0.090 ksf Pedestrian Load H10 design vehicle	NYSDOT Bridge Manual § 2.6.4

Not typical, desired, &/or preferred, but within general range of acceptance

(highlight yellow)

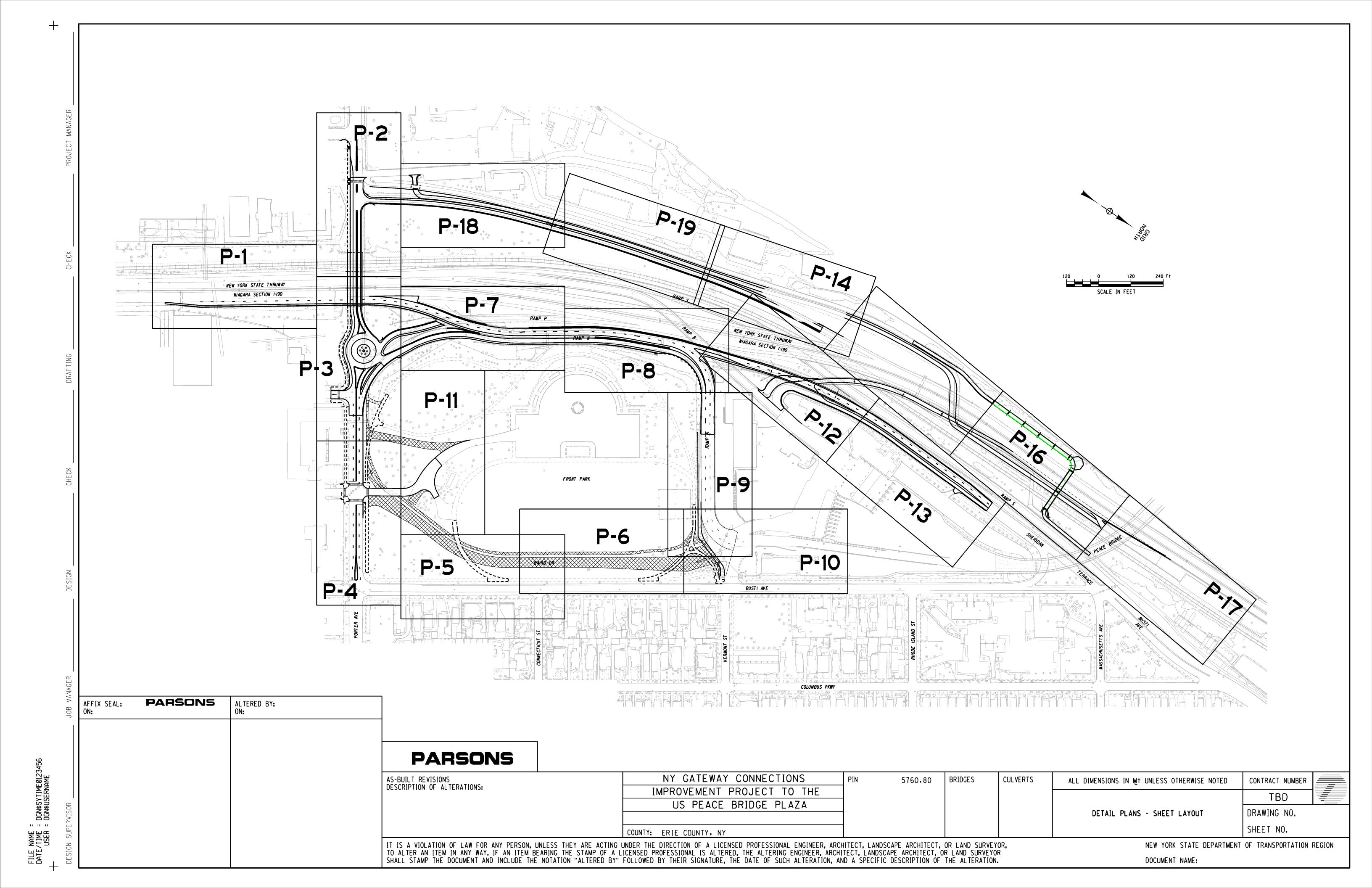
- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. AASHTO Guide for the Development of Bicycle Facilities, 4th edition
- 3. The Regional Landscape Architect has concurred that the use of a design speed of 18 mph is consistent proposed use and within the range of functional class speeds for the terrain and volume.
- * Non-Conforming Feature (existing and proposed)

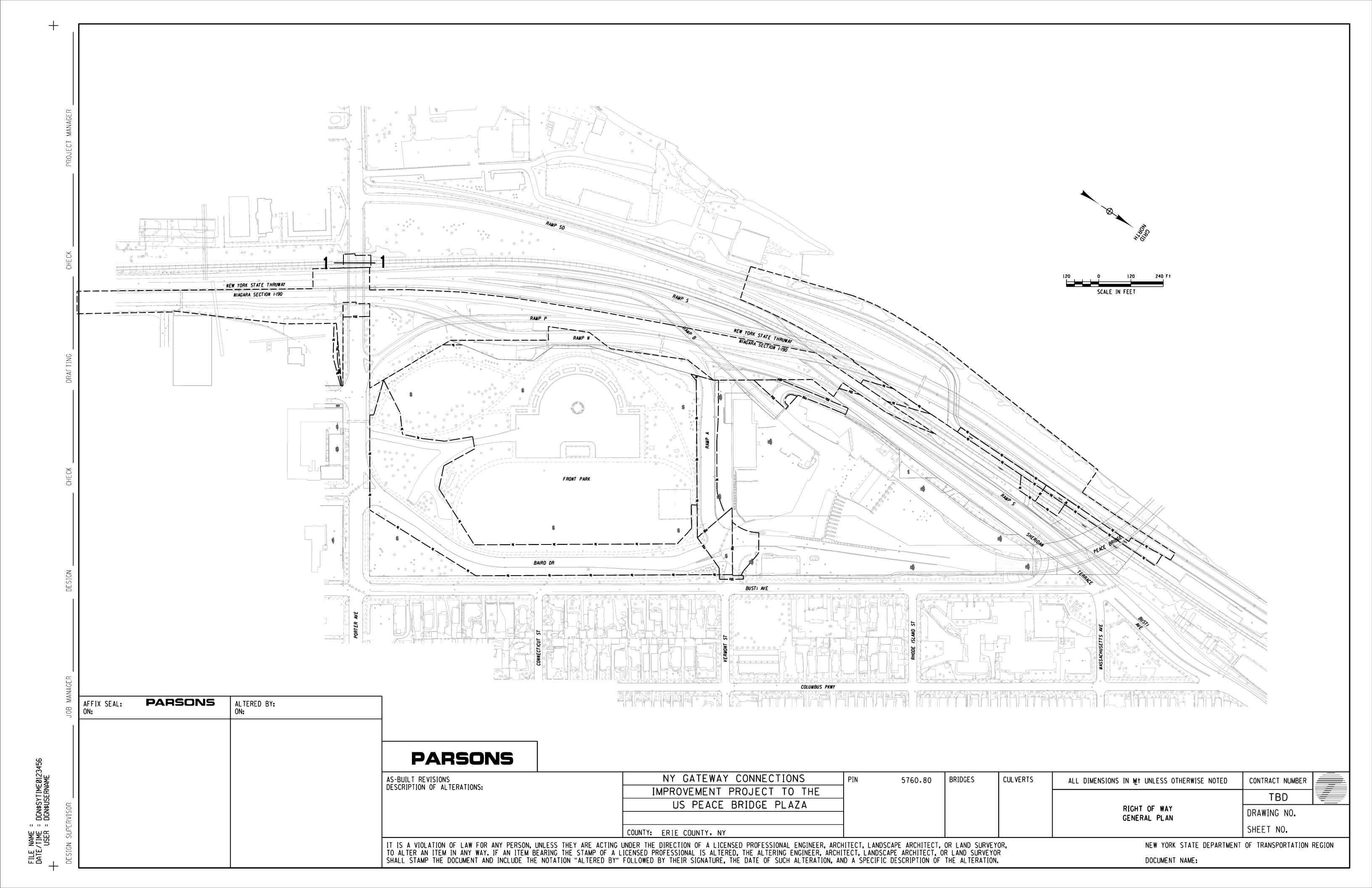
Critical Design Elements for Porter Avenue Share Use Path					
PIN:		5760.80	NHS (Y/N):		No
Route No. & Name:		Porter Ave Path		Functional Classification:	Shared Use Path
Project Type:		Reconstruction	1	Design Classification:	Shared Use Path
% Trucks:		none	1	Terrain:	Rolling
ADT (2040):		N/A	1	Truck Access/Qualifying:	N/A
	DESIGN ELEMENT	STANDARD CRITERIA	EXISTING CONDITIONS	PROPOSED CONDITION	REFERENCE
1	Design Speed ³	18 mph	New Path	18 mph	AASHTO ² (section 5.2.4)
2	Travel Lane width (min)	10.0 ft.	New Path	10.0 ft.	AASHTO ² (section 5.2.1)
3	Shoulder Width:	2.0 ft.	New Path	2.0 ft.	AASHTO ² (section 5.2.1)
4	Bridge Roadway Width	NA	New Path	NA	NYSDOT Bridge Manual § 2.3.1
5	Maximum Grade	5.0%	New Path	4.0%	AASHTO ² (section 5.2.7)
6	Minimum Radius	60 ft. no SE	New Path	327 ft.	AASHTO ² (table 5-2)
7	Maximum Superelevation	2.0%	New Path	NC	AASHTO ²
8	Stopping Sight Distance (min)	165 ft.	New Path	> 200 ft.	AASHTO ² (section 5.2.8)
9	Horizontal Clearance (min)	2.0 ft.	New Path	Varies-2 ft. min. No horiz. clear. On bridge	AASHTO ² (section 5.2.1)
10	Vertical Clearance	8.0 ft (min) 10.0 ft (desired)	New Path	Unlimited	AASHTO ² (section 5.2.1)
11	Pavement Cross Slope (min) / (max)	2.0%	New Path	2.0%	AASHTO ² (section 5.2.6)
12	Physical Separation	5.0 ft. form face of curb (min.)	New Path	Varies 0 to 8.8 ft.*	AASHTO ² (section 5.2.2)
eneral	Structural Capacity	See Porter Ave Bridge	New Path	Included w/ Porter Ave Vehicle Bridge	NYSDOT Bridge Manual § 2.6.4

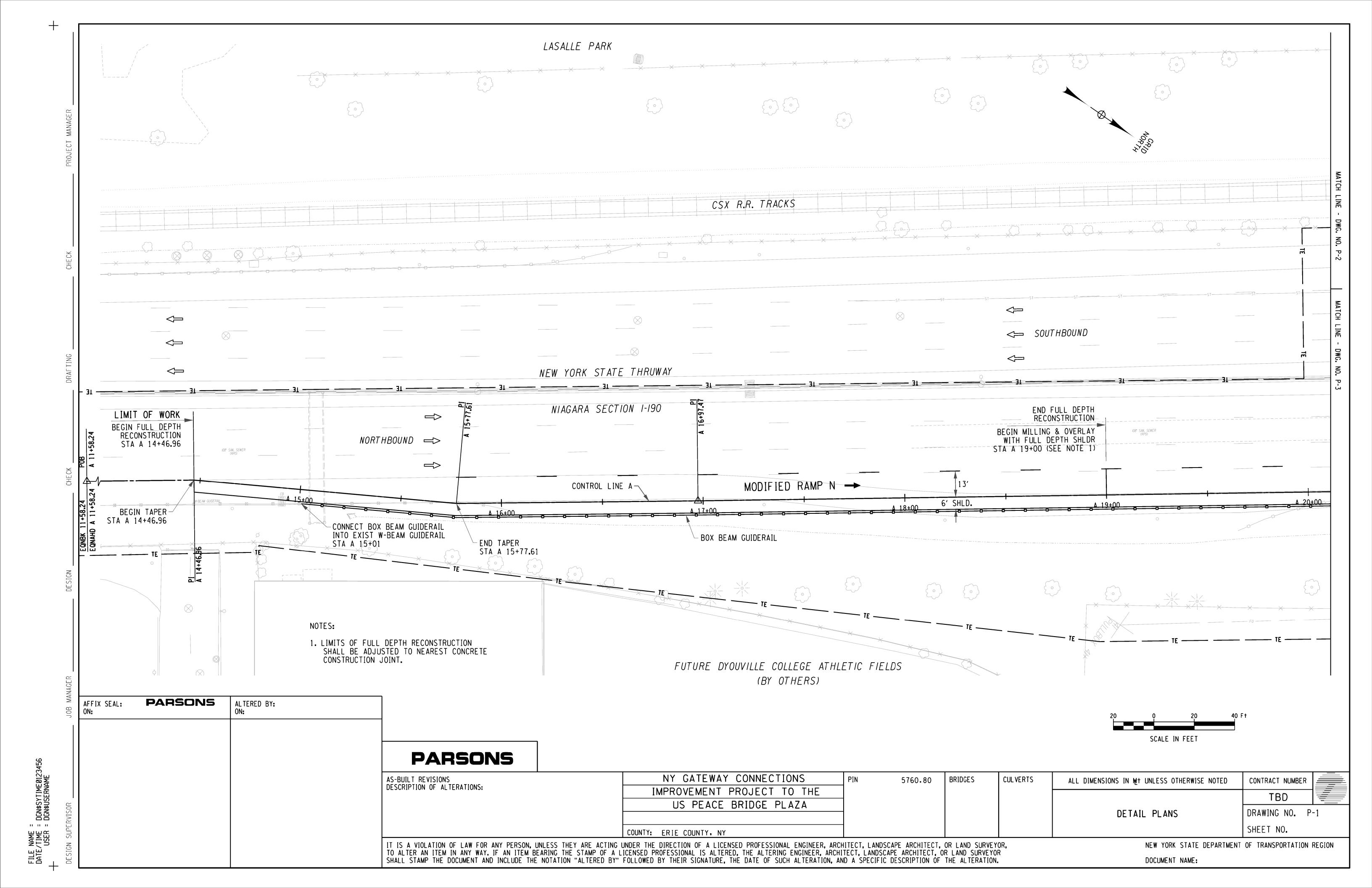
- 1. All existing conditions were acquired from GIS database mapping or As-Builts (as available)
- 2. AASHTO Guide for the Development of Bicycle Facilities, 4th edition
- 3. The Regional Landscape Architect has concurred that the use of a design speed of 18 mph is consistent proposed use and within the range of functional class speeds for the terrain and volume.
- * Non-Conforming feature at locations less than 5 ft. (west of roundabout)

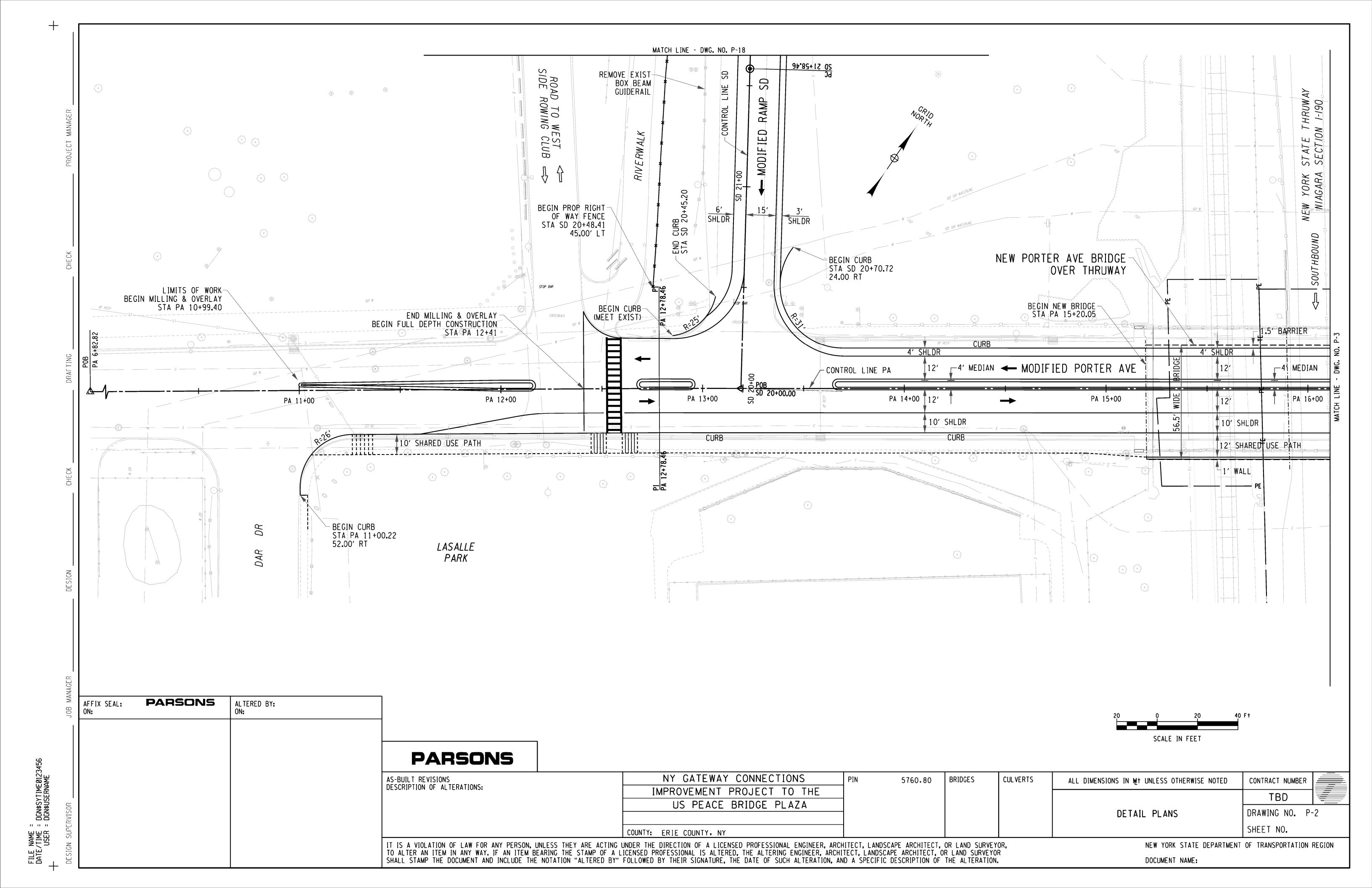
2. Build Alternative

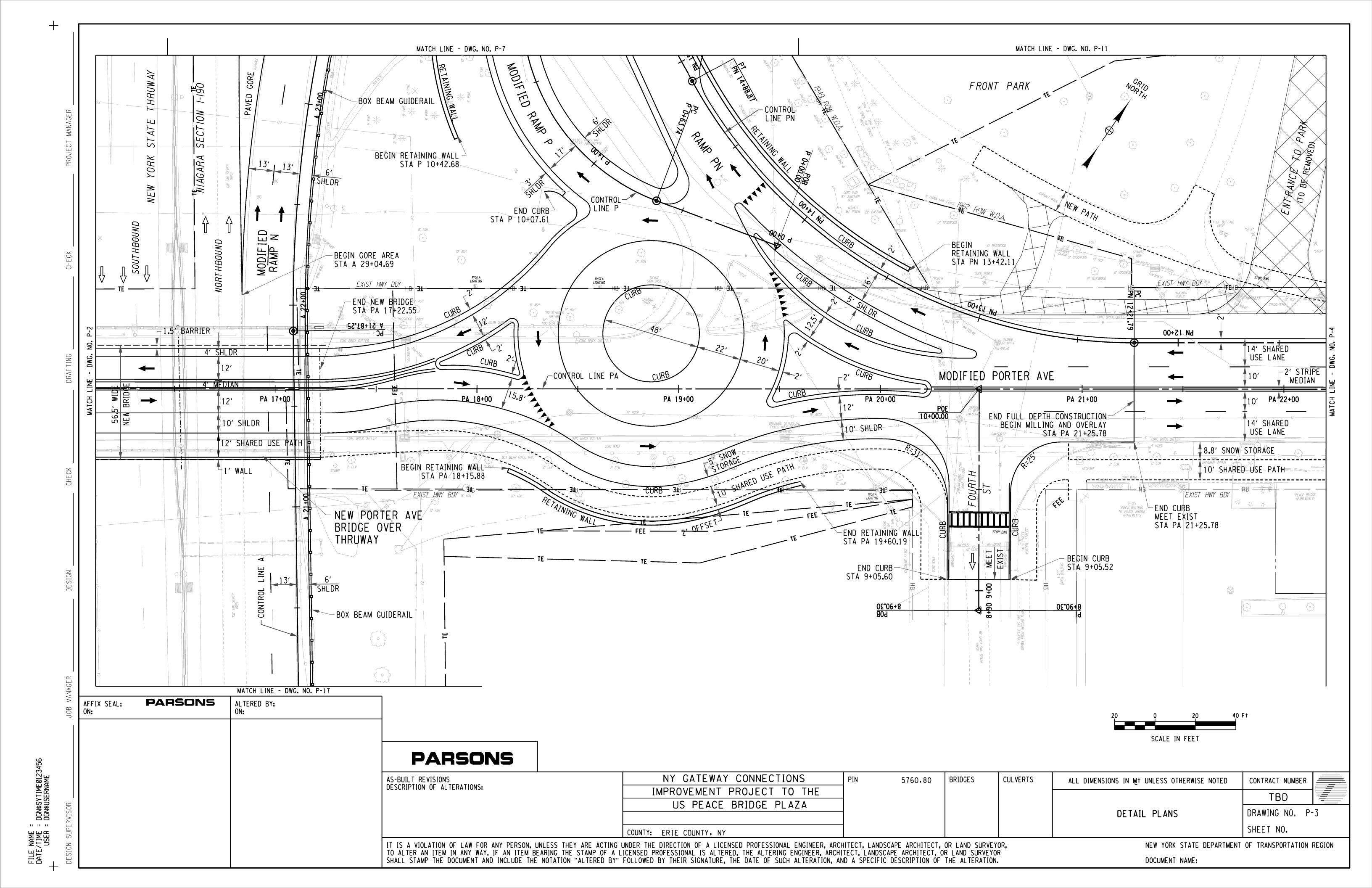
- a. Preliminary Plans
- b. Profiles

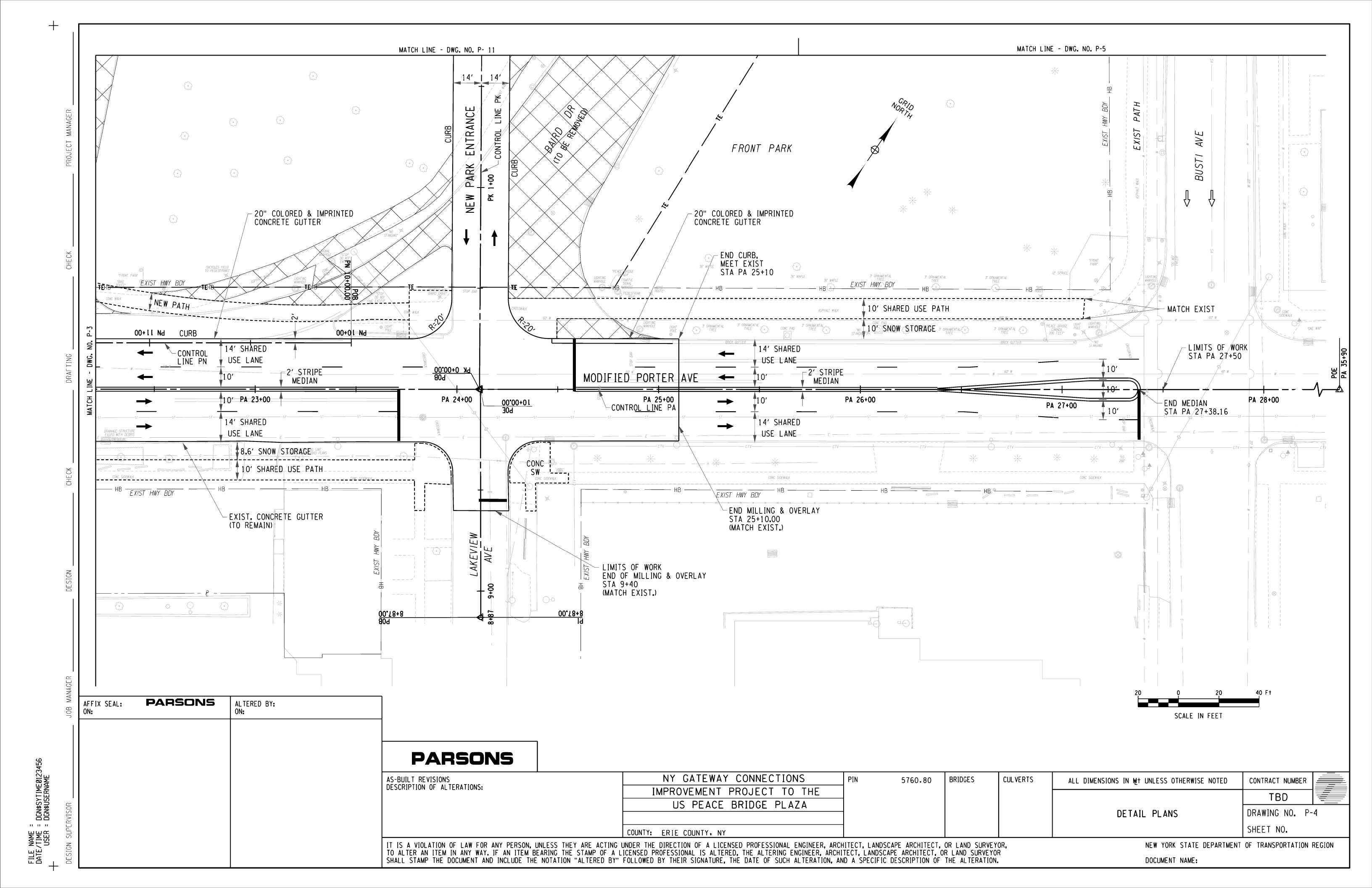


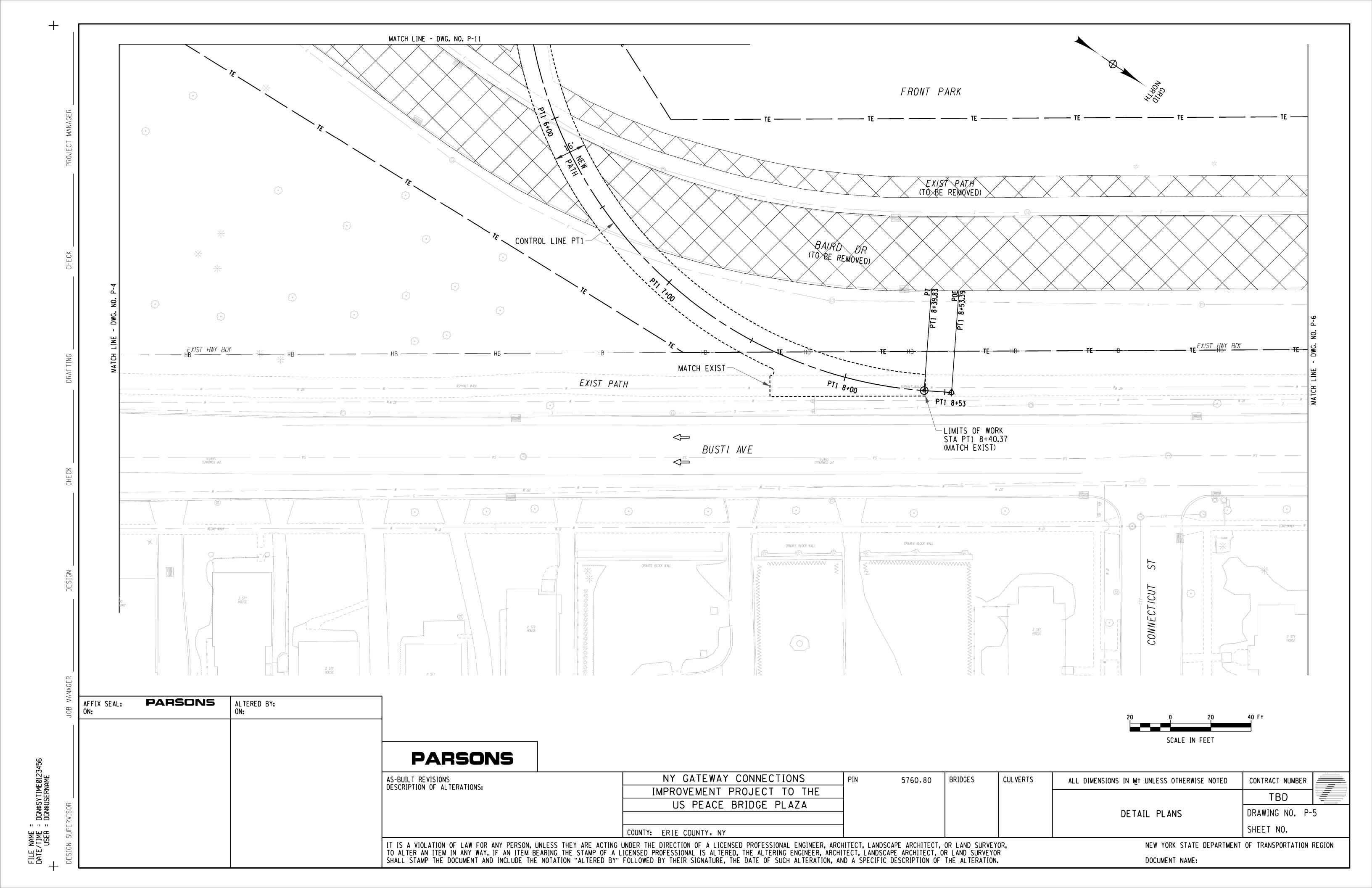


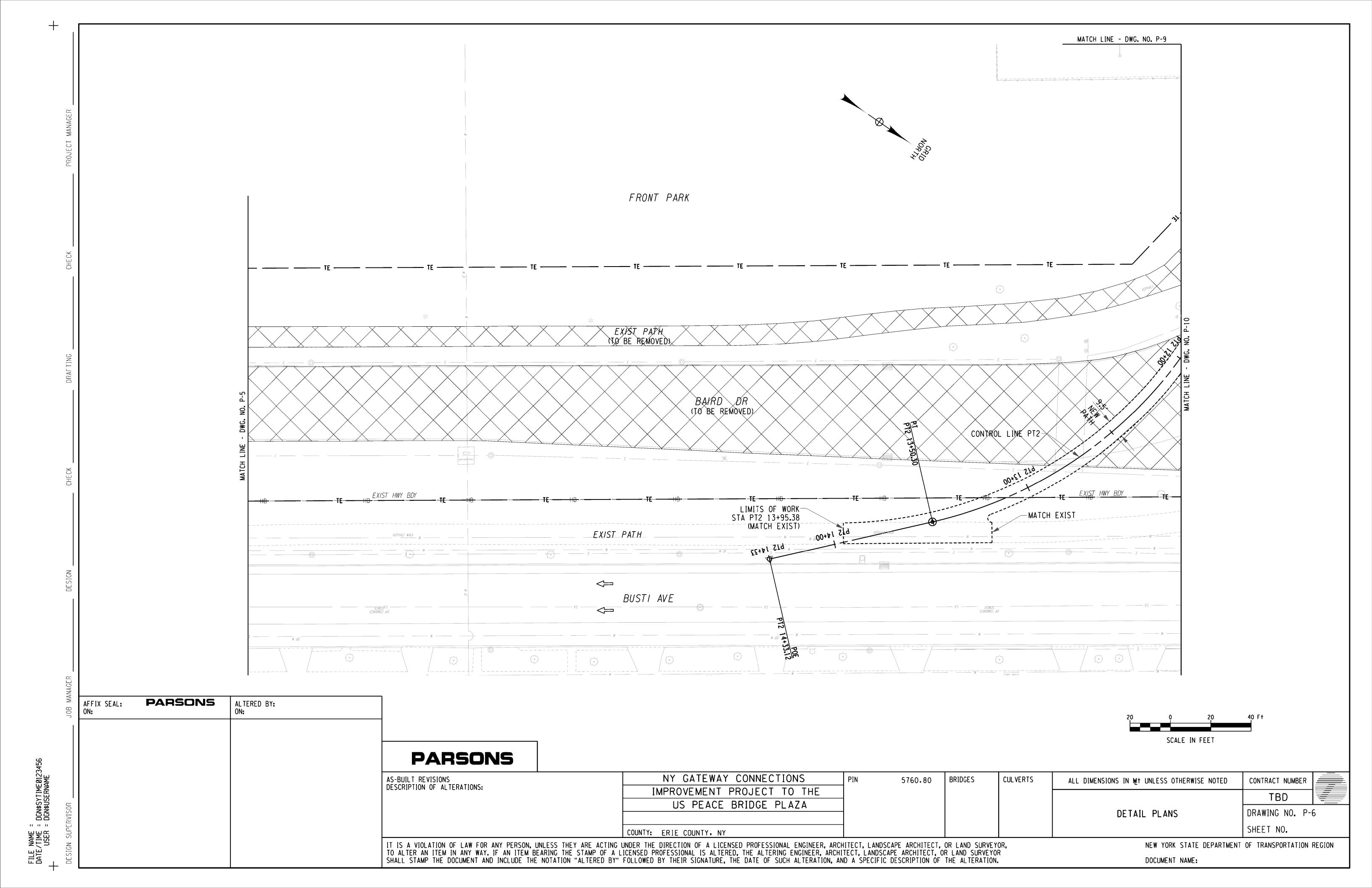


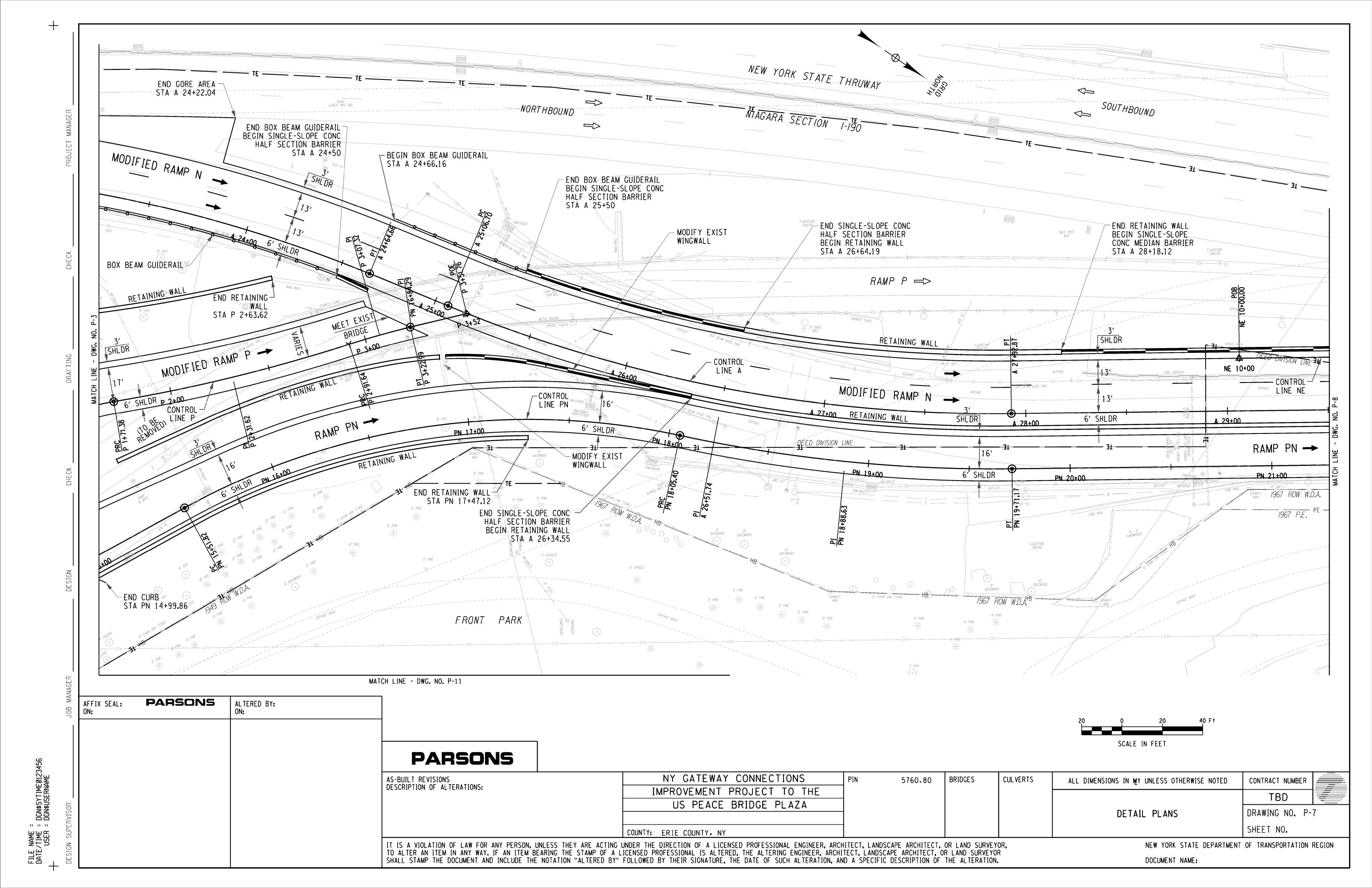


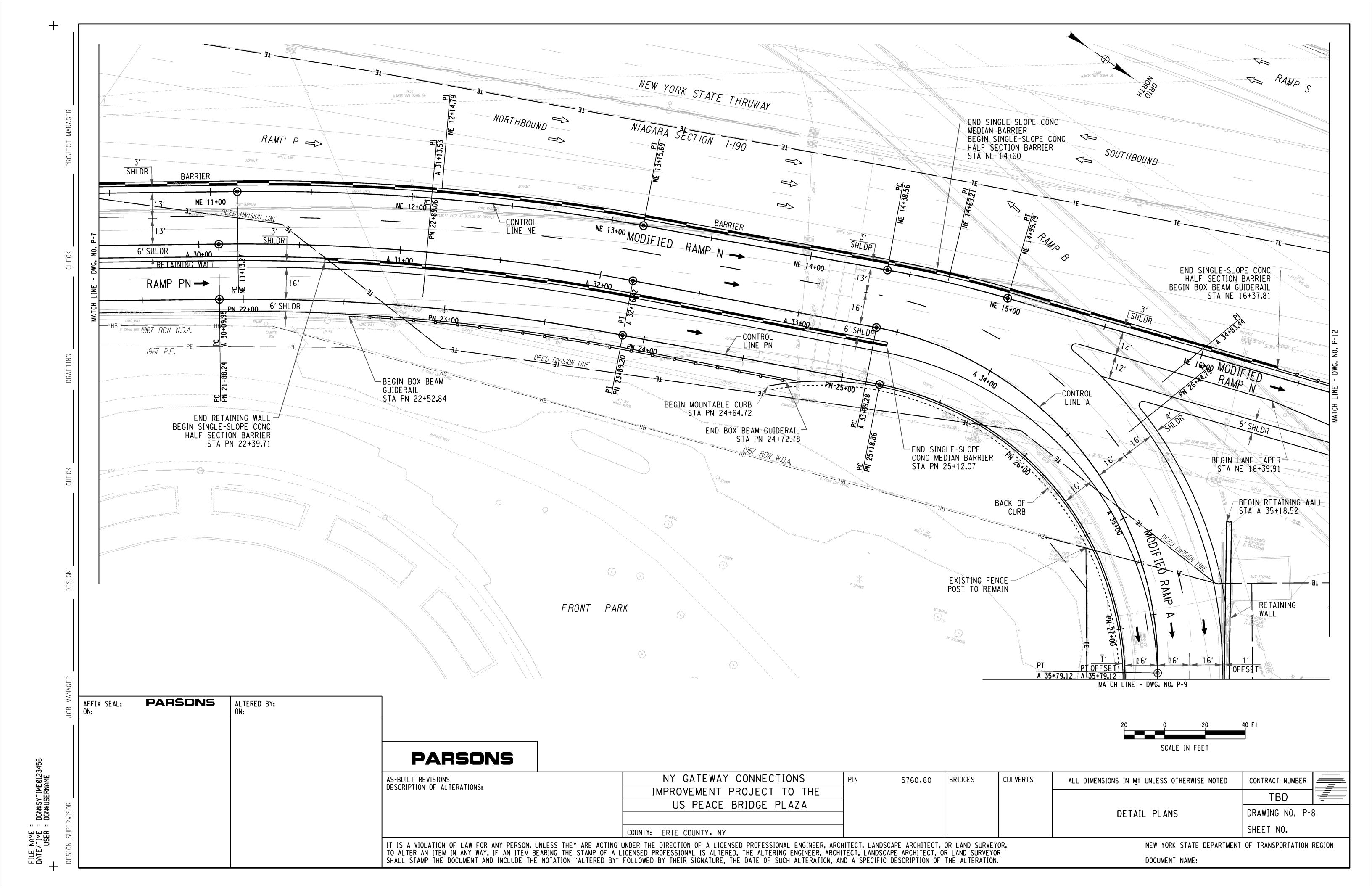


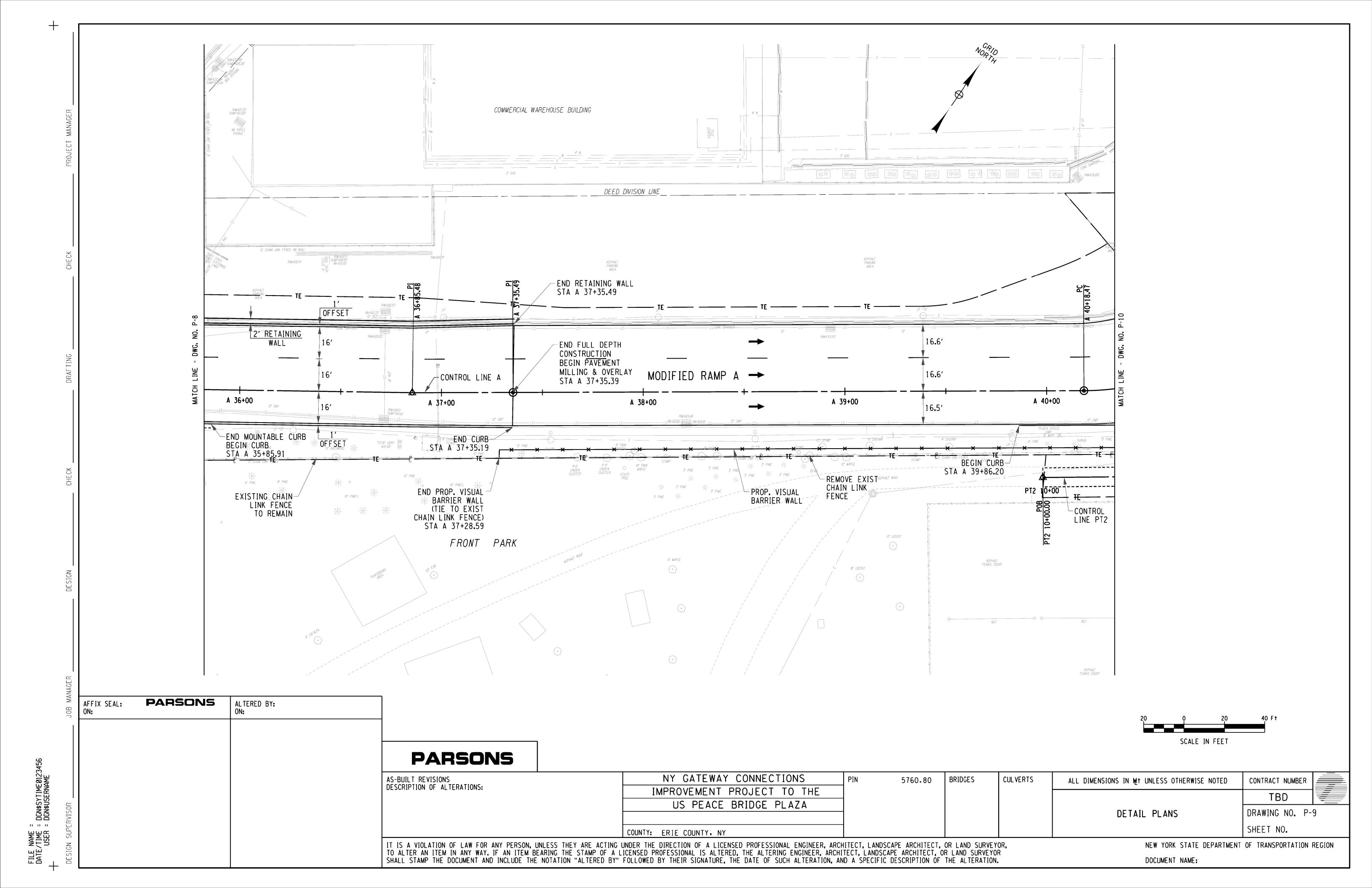


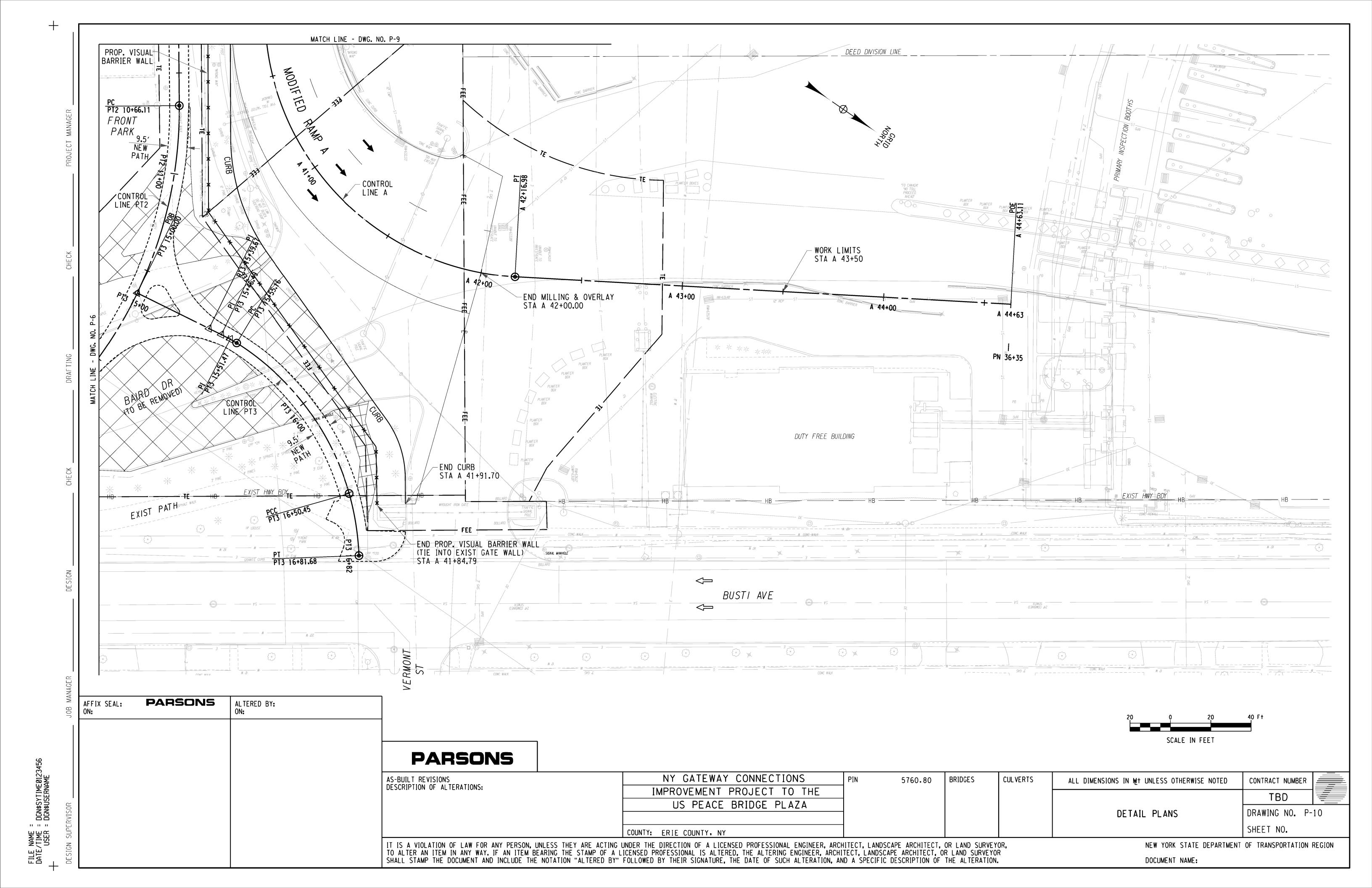


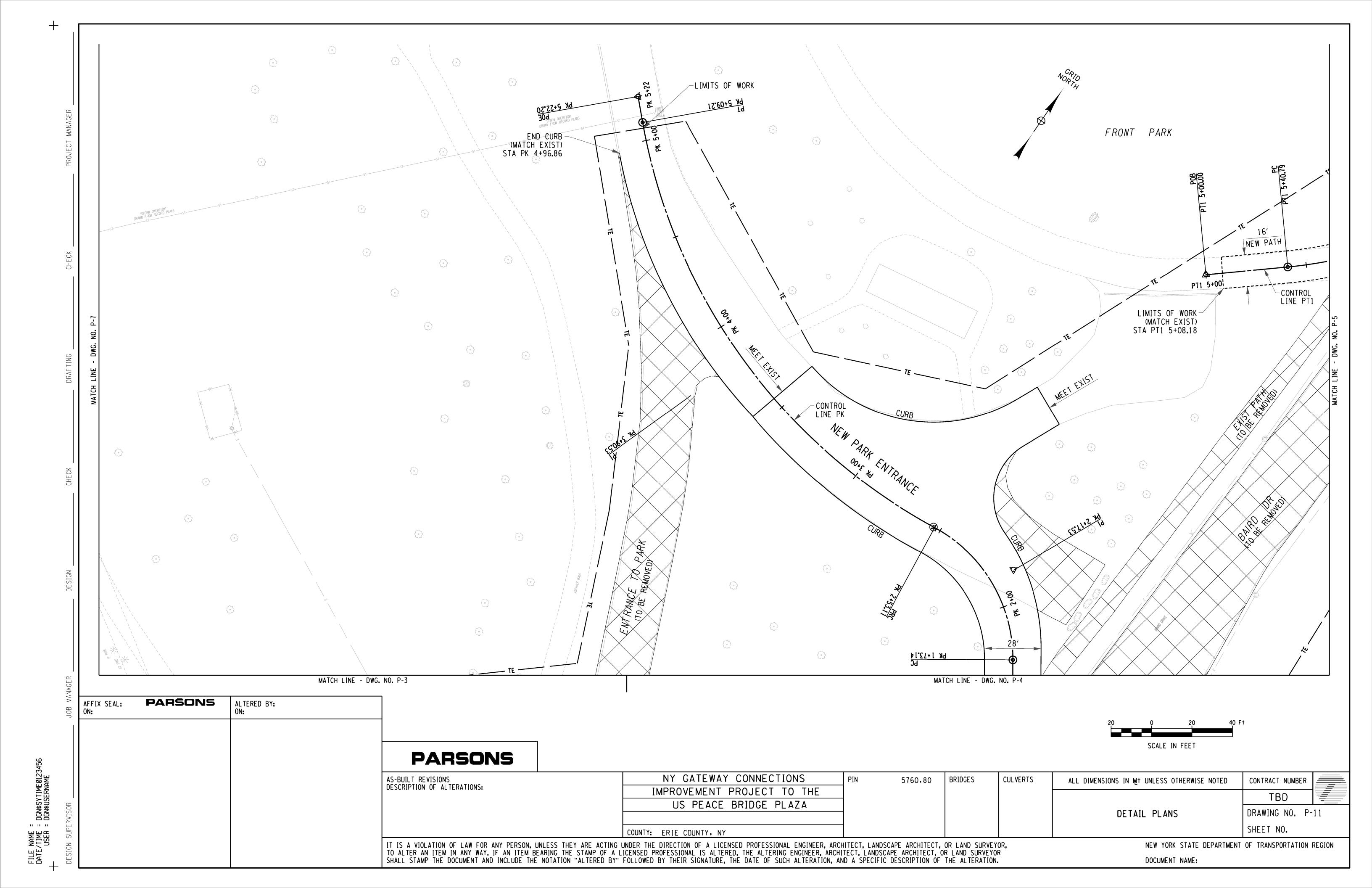


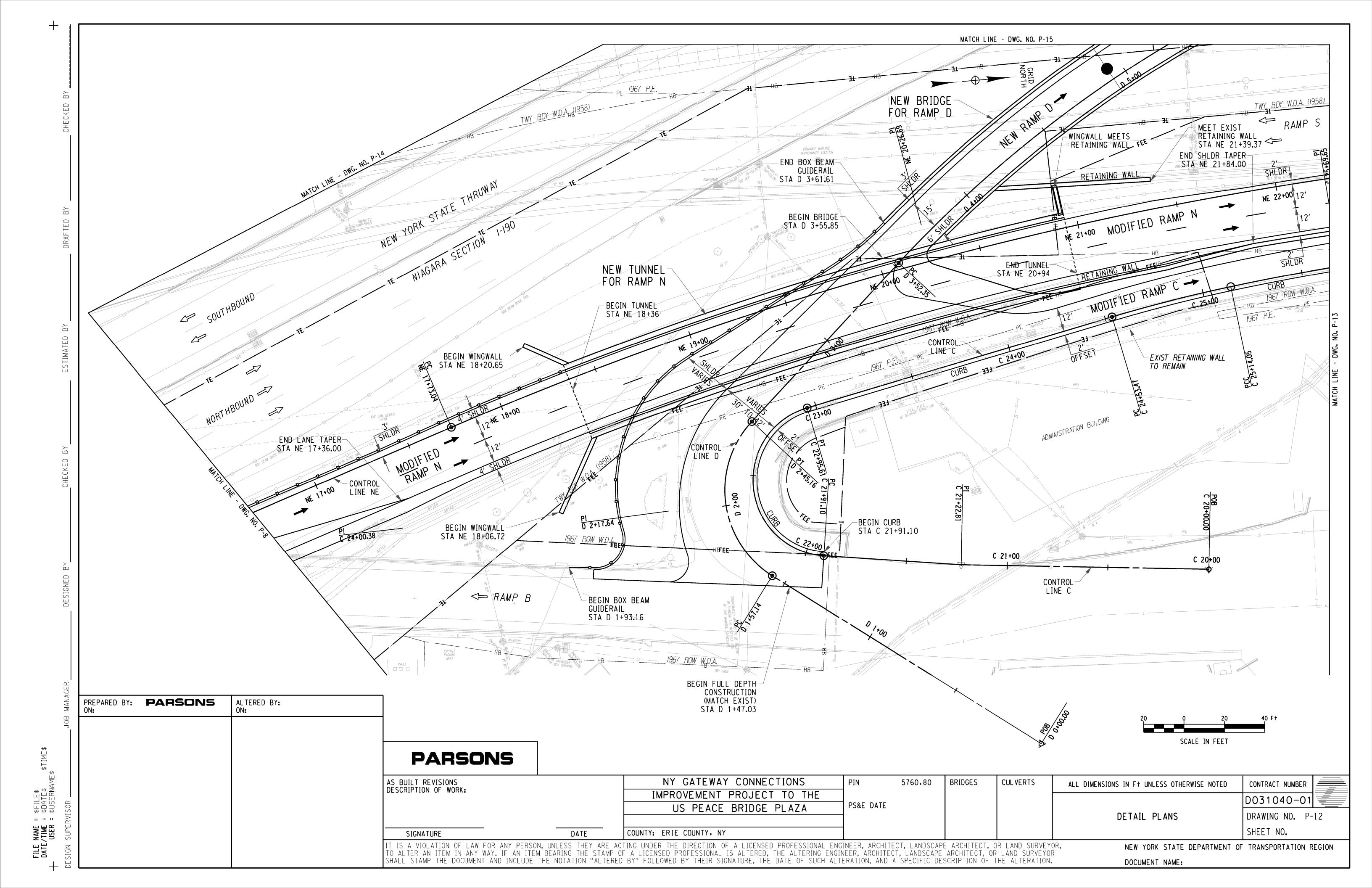


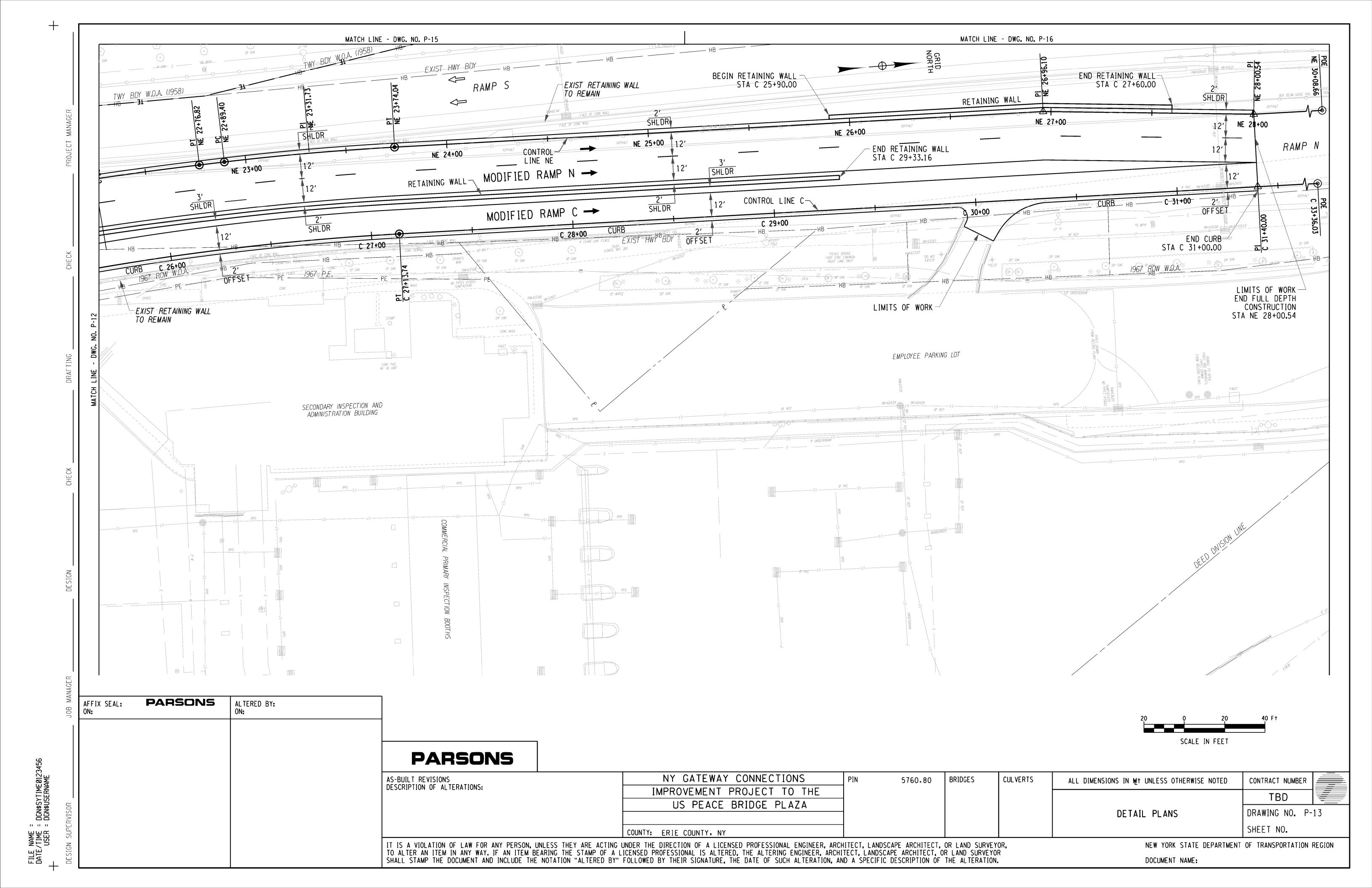


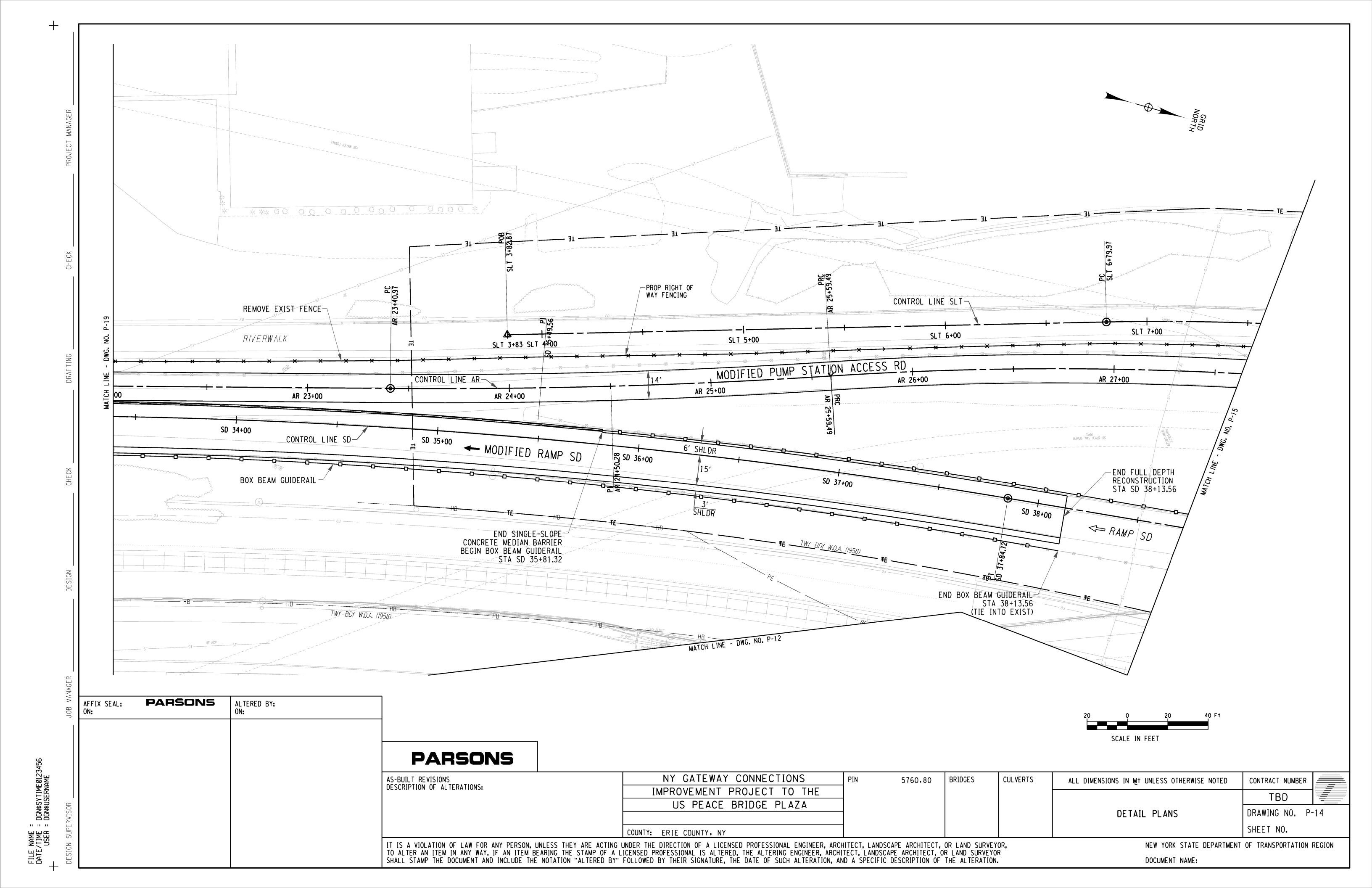


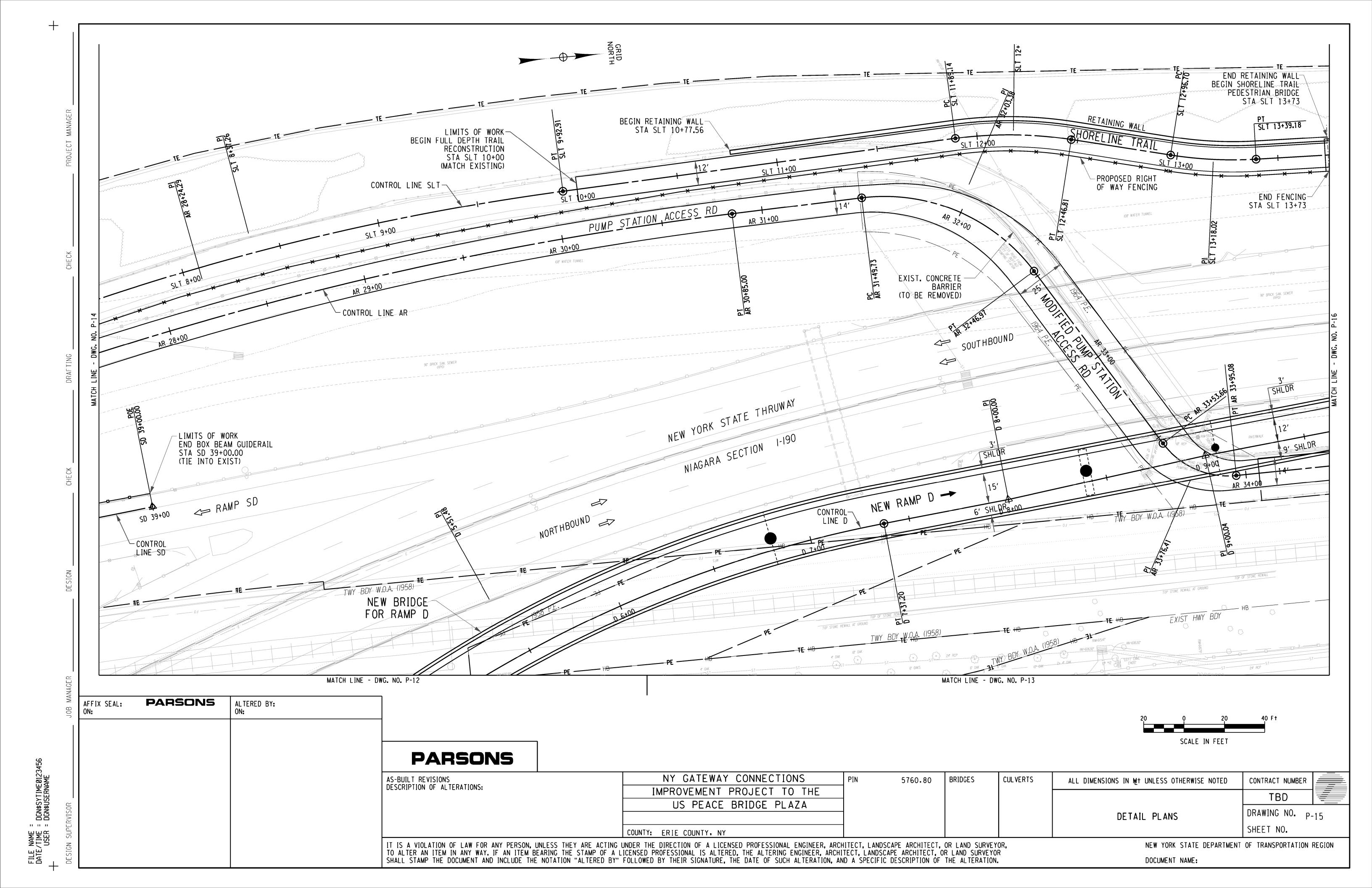


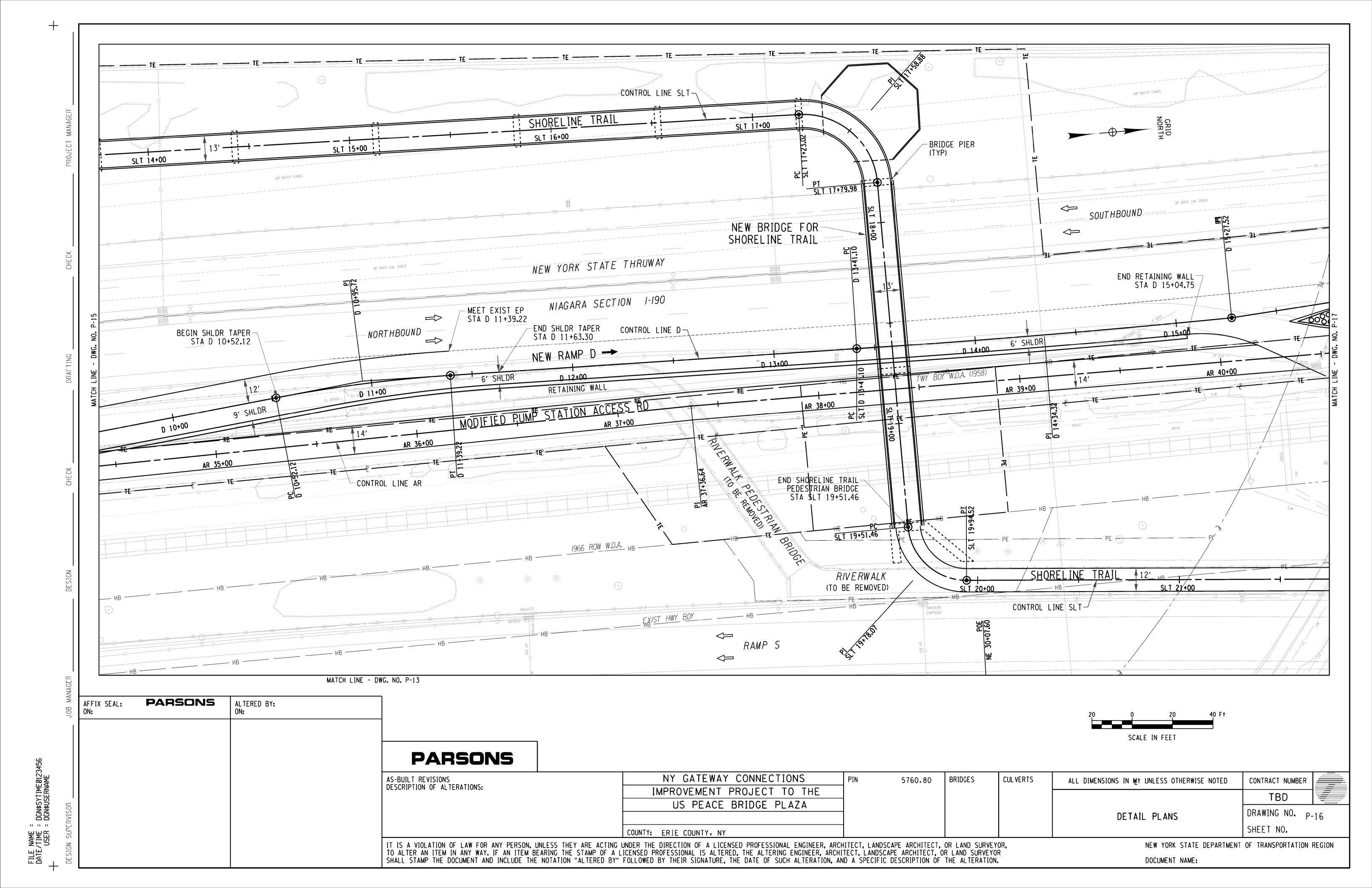


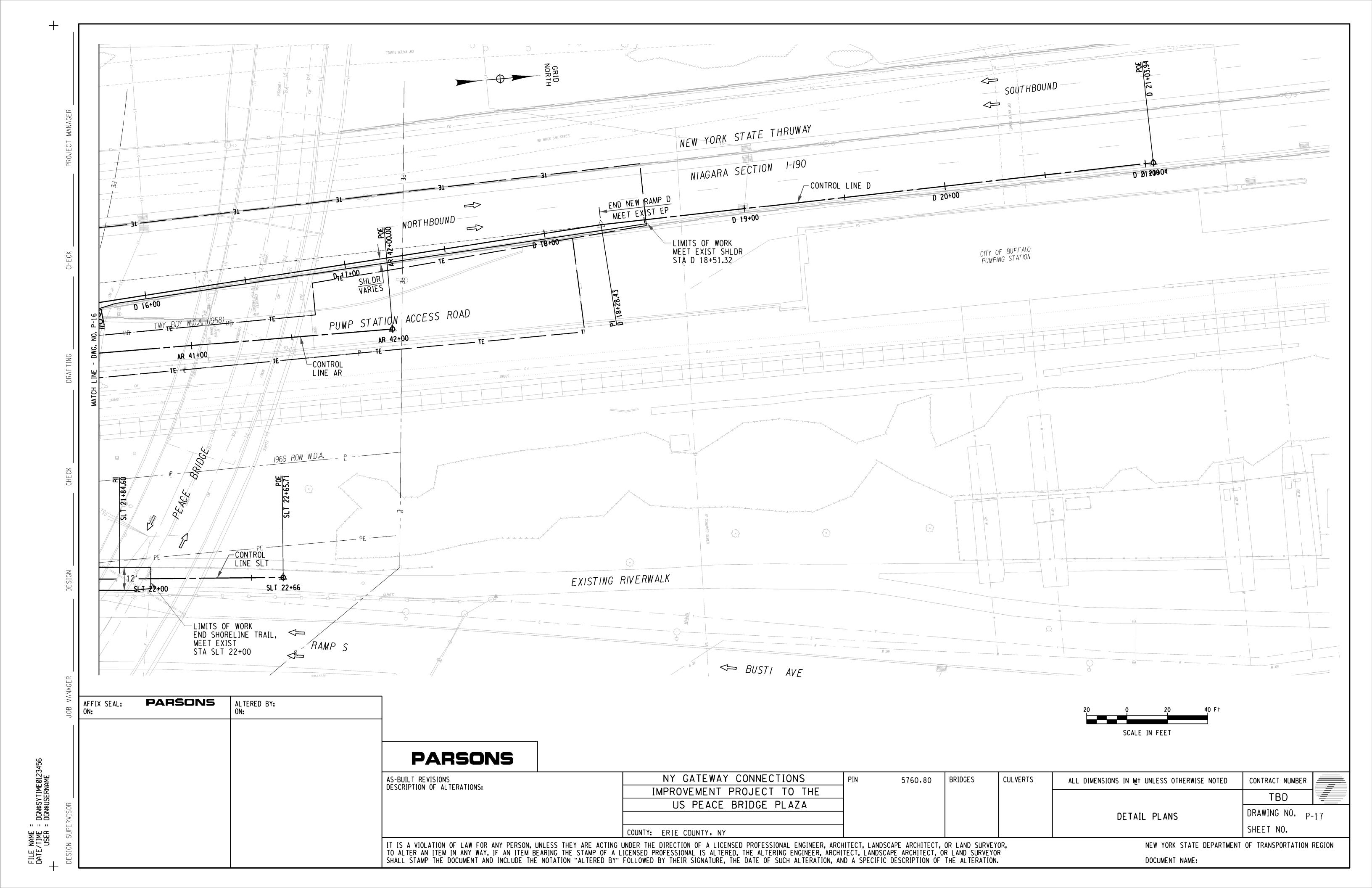


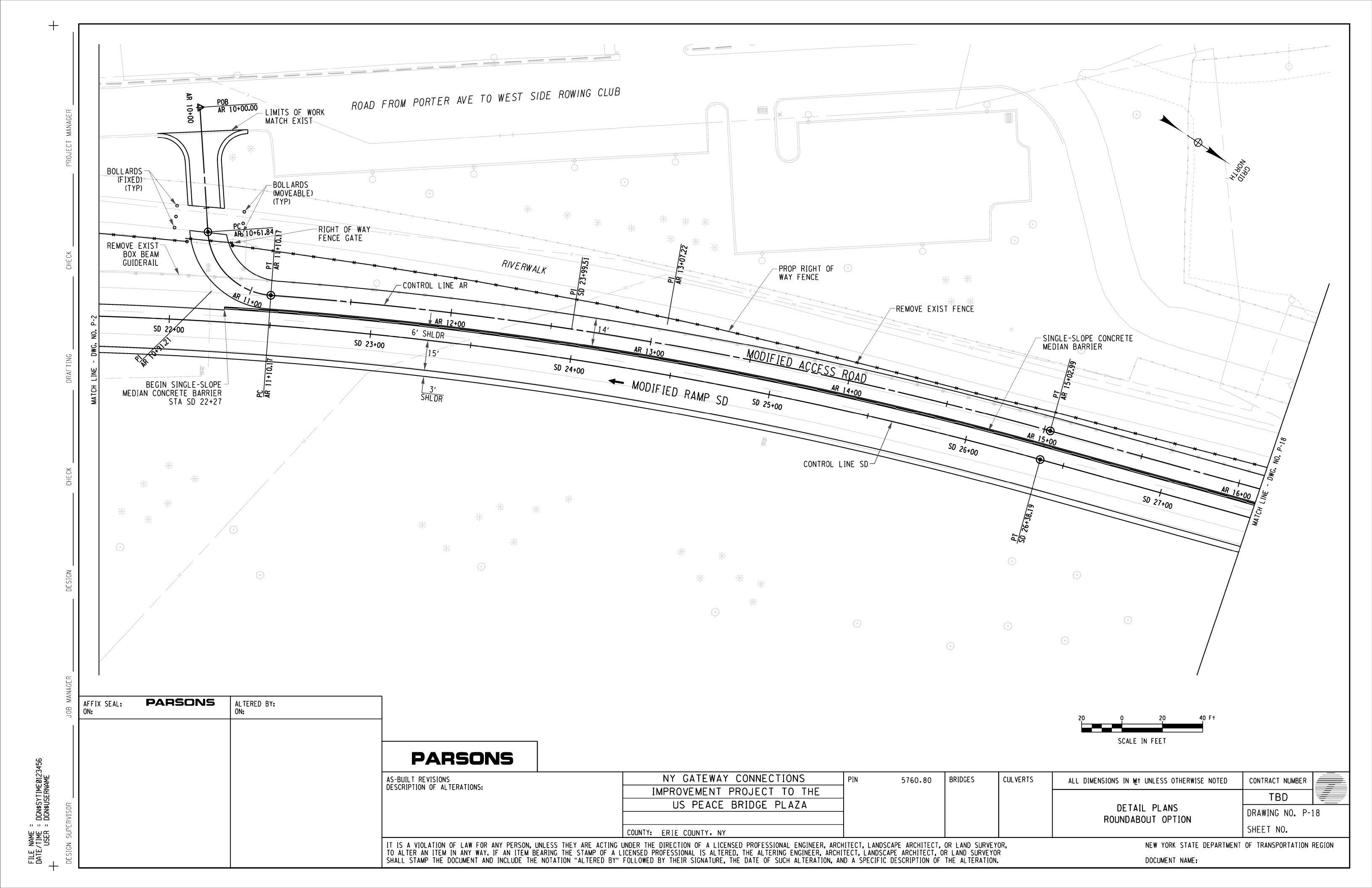


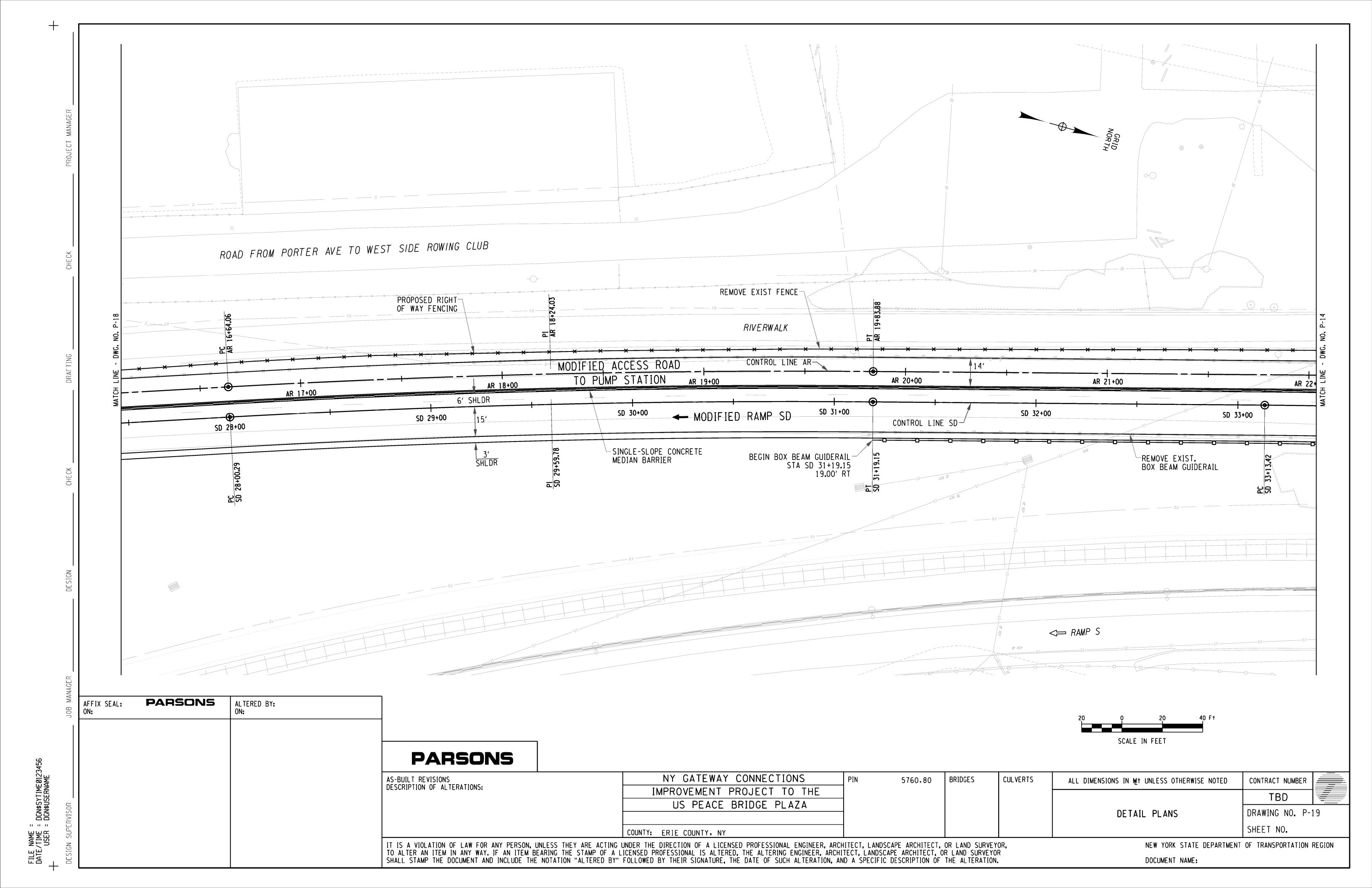


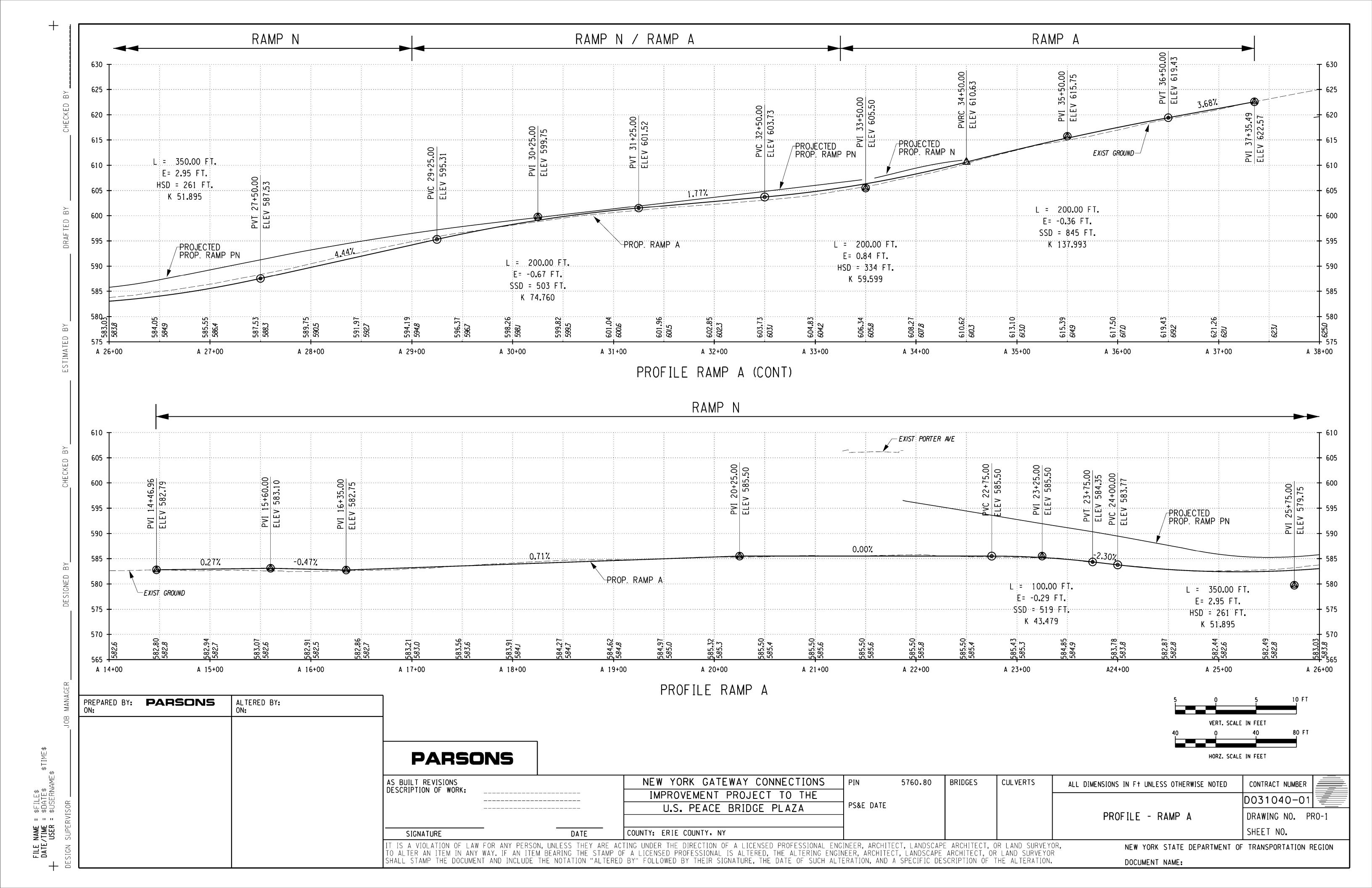


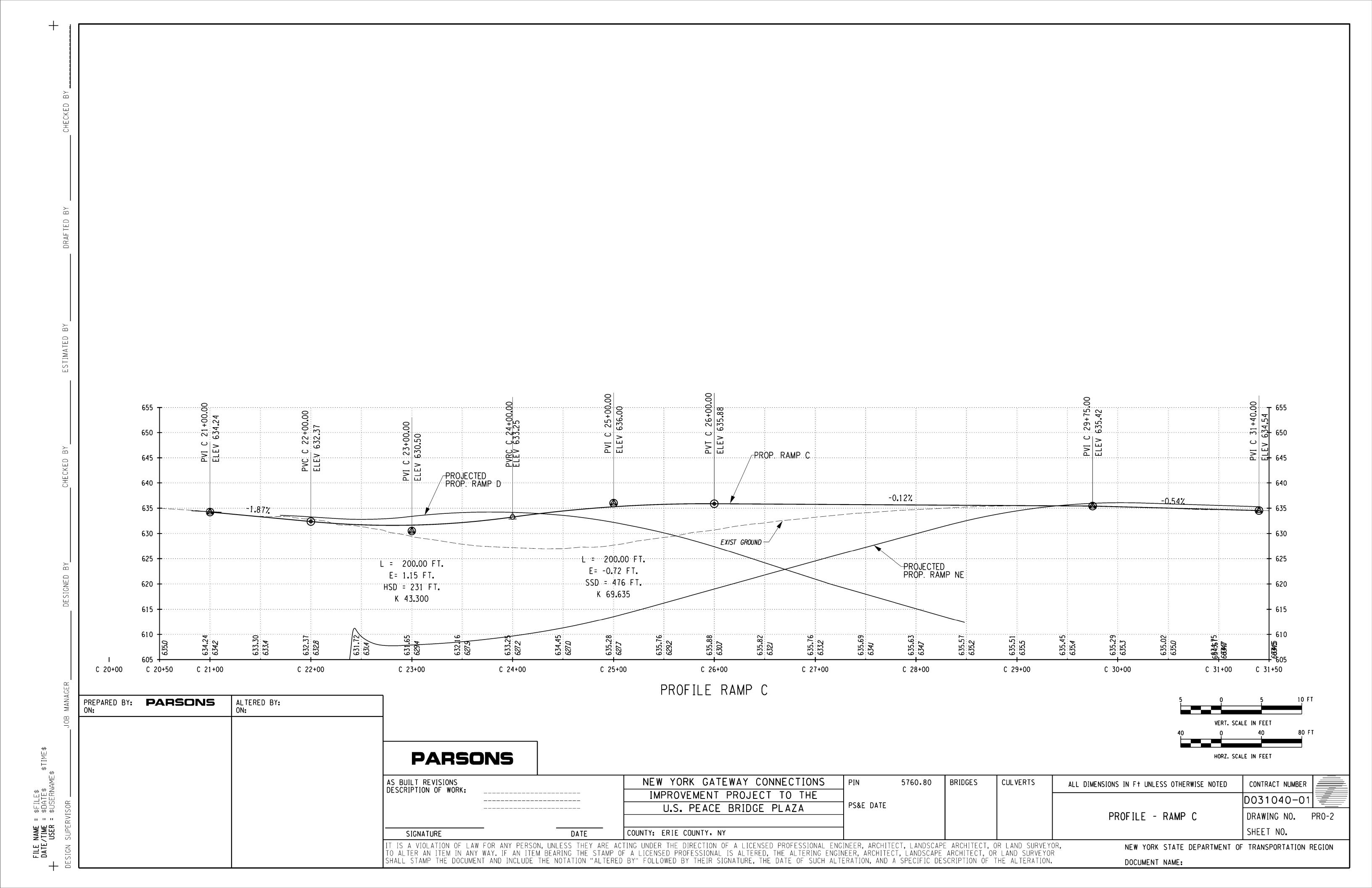


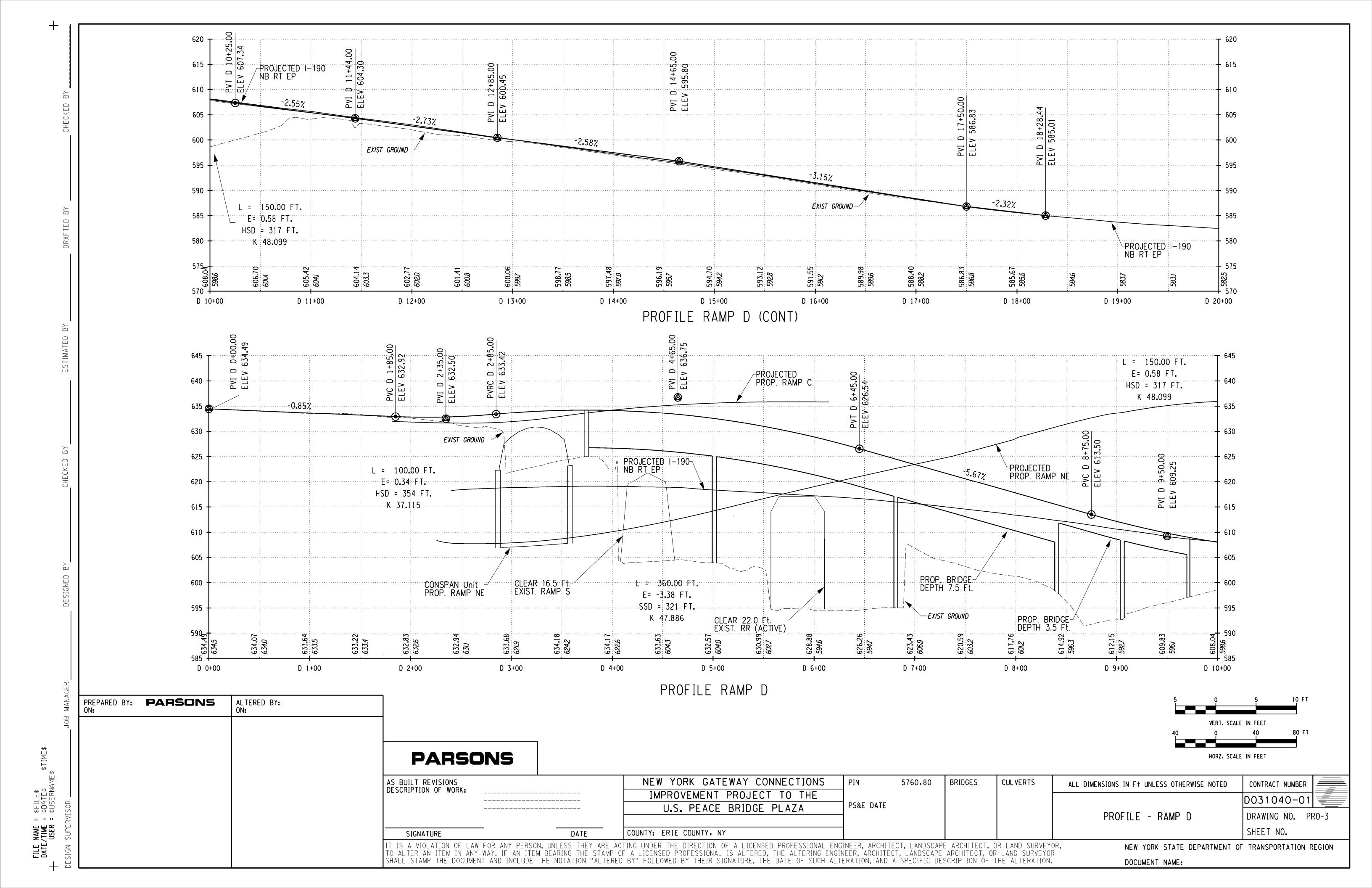


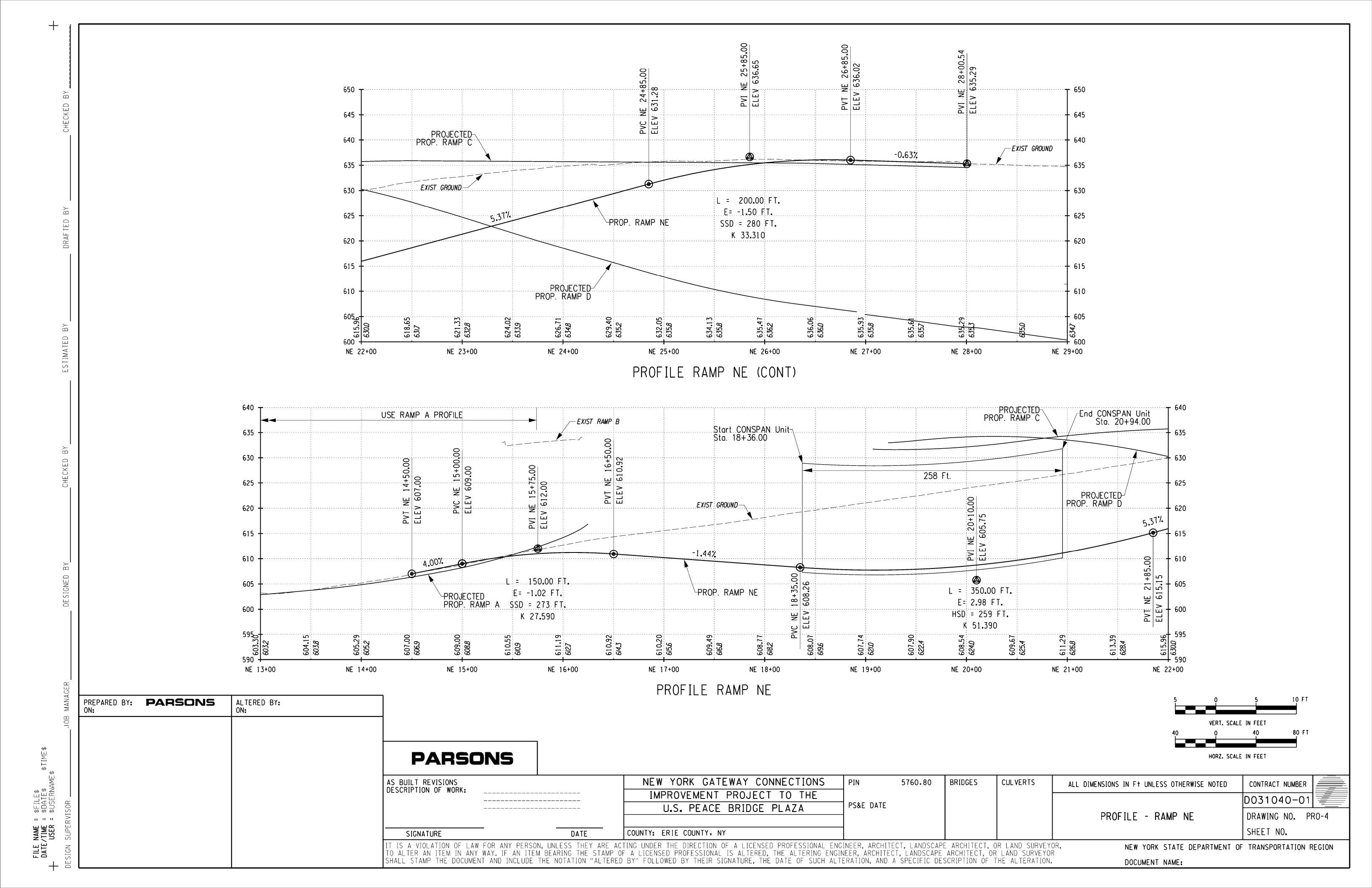


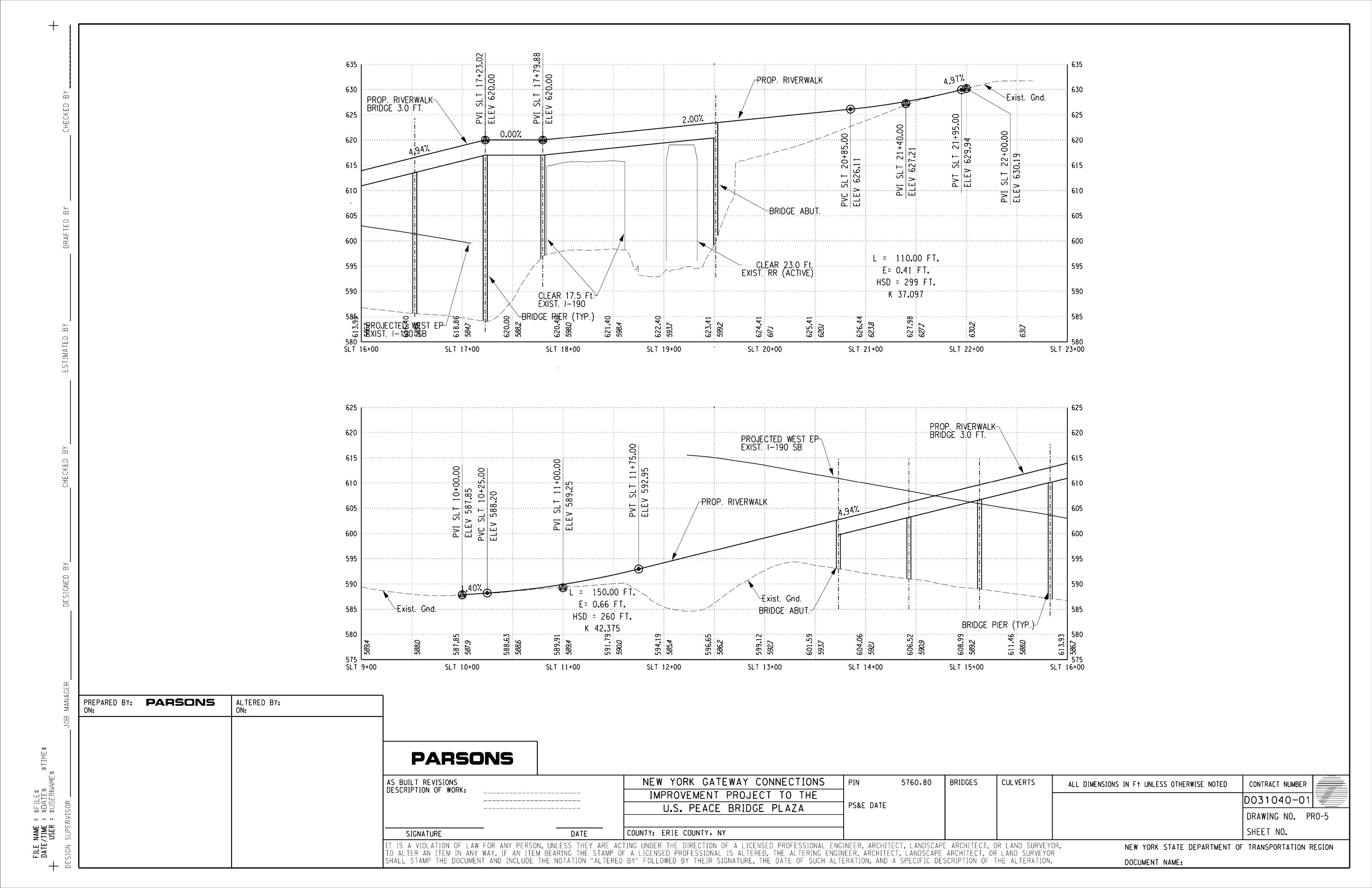




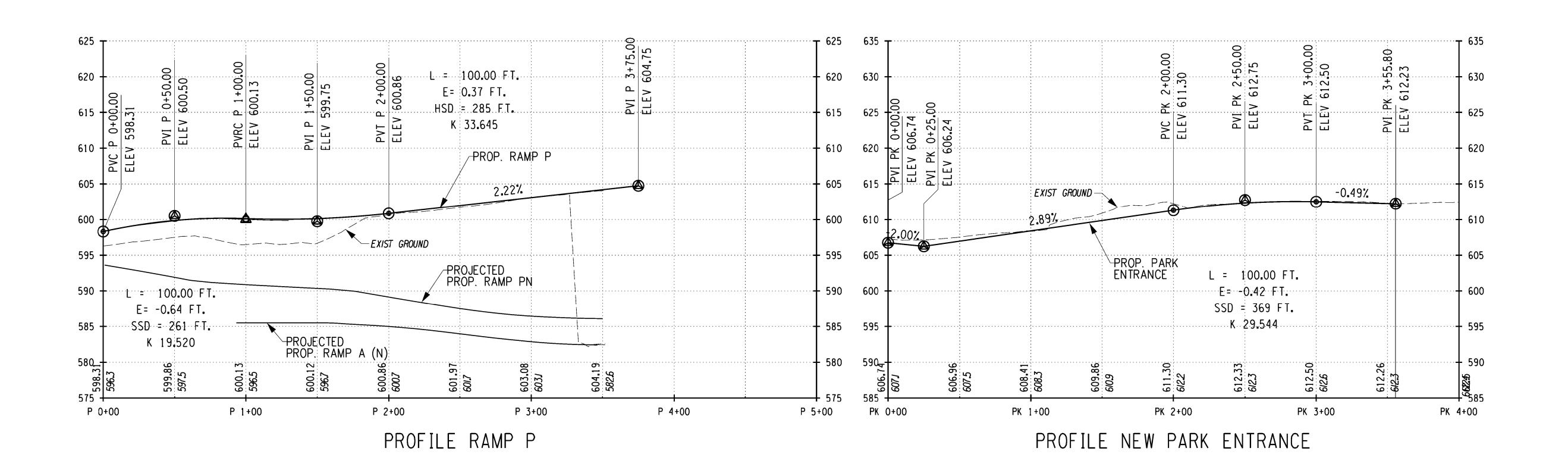


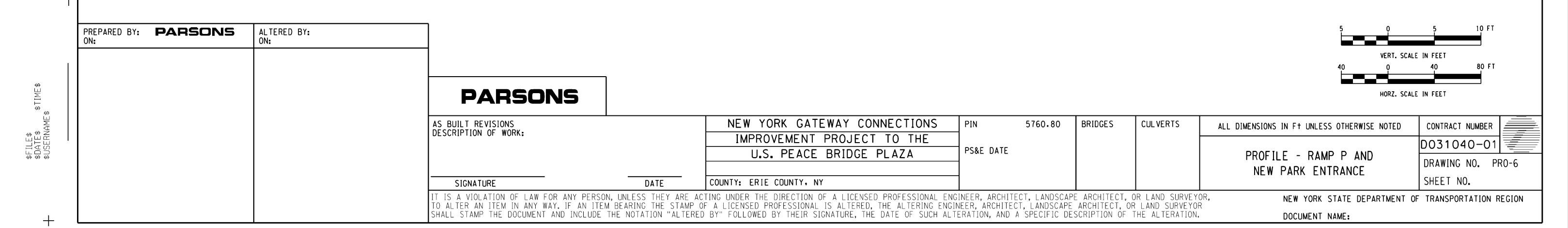












3. Curve Data

Horizontal Alignment Name:

RAMP N

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC (-9)	A 21+87.25	1056270.474	1064045.035
PI ()	A 23+27.87	1056385.209	1063963.733
CC ()		1056667.676	1064605.57
PT (-165)	A 24+64.66	1056522.661	1063934.05
Radius:	687		
Delta:	23°08'09"	Right	
Degree of Curvature(Arc):	8°20'24"		
Length:	277.41		
Tangent:	140.62		
Chord:	275.53		
Middle Ordinate:	13.95		
External:	14.24		
Tangent Direction:	N 35°19'19" W		
Element: Circular	CURVE NO. 2		
PC ()	A 25+06.70	1056563.757	1063925.175
PI ()	A 26+51.74	1056705.527	1063894.56
CC ()		1056413.253	1063228.24
PT (-11)	A 27+92.87	1056824.07	1063810.991
Radius:	713		
Delta:	22°59'47"	Left	
Degree of Curvature(Arc):	8°02'09"		
Length:	286.17		
Tangent:	145.04		
Chord:	284.25		
Middle Ordinate:	14.31		
External:	14.6		
	N 12°11'09" W	i	i

Horizontal Alignment Name: RAMP N / RAMP A OVERLAP

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PC ()	A 30+09.95	1057001.494	1063685.914
PI ()	A 31+13.53	1057086.153	1063626.233
CC (-155)		1057593.462	1064525.631
PT (-12)	A 32+16.42	1057181.022	1063584.651
Radius:	1027.4		
Delta:	11°30'51"	Right	
Degree of Curvature(Arc):	5°34'36"		
Length:	206.46		
Tangent:	103.58		
Chord:	206.12		
Middle Ordinate:	5.18		
External:	5.21		
Tangent Direction:	N 35°10'56" W		
Element: Circular	CURVE NO. 4		
PC (-4)	A 33+39.28	1057293.555	1063535.327
PI ()	A 34+83.44	1057425.582	1063477.458
CC ()	A 34103.44	1057362.482	1063692.584
PT()	A 35+79.12	1057505.433	1063597.474
Radius:	171.7	1037303.433	1003337.474
Delta:	80°01'52"	Right	
Degree of Curvature(Arc):	33°22'11"	MgHt	
Length:	239.83		
Tangent:	144.15		
Chord:	220.8		
Middle Ordinate:	40.2		
External:	52.49		
Tangent Direction:	N 23°40'06" W		

Horizontal Alignment Name:

RAMP A

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 5		
PC (-6)	A 40+18.47	1057753.769	1063959.899
PI ()	A 41+42.28	1057824.207	1064061.72
CC (-163)		1057861.708	1063885.228
PT (-164)	A 42+16.98	1057929.96	1063997.336
Radius:	131.25		
Delta:	86°39'30"	Left	
Degree of Curvature(Arc):	43°39'14"		
Length:	198.51		
Tangent:	123.81		
Chord:	180.12		
Middle Ordinate:	35.78		
External:	49.18		
Tangent Direction:	N 55°19'30" E		



Horizontal Alignment Name:

RAMP C

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC (-46)	C 21+91.10	1057776.794	1063480.537
PI ()	C 24+00.38	1057569.941	1063448.744
CC (-64)		1057782.491	1063443.472
PT (-65)	C 22+95.61	1057774.964	1063406.735
Radius:	37.5		
Delta:	159°40'58"	Right	
Degree of Curvature(Arc):	152°47'19"		
Length:	104.51		
Tangent:	209.28		
Chord:	73.82		
Middle Ordinate:	30.89		
External:	175.12		
Tangent Direction:	S 8°44'17" W		
Element: Circular	CURVE NO. 2		
PC (-67)	C 24+53.47	1057929.605	1063375.05
PI()	C 24+83.77	1057959.294	1063368.967
CC (-79)		1058080.148	1064109.79
PT (-125)	C 25+14.05	1057989.38	1063365.299
Radius:	750		
Delta:	4°37'40"	Right	
Degree of Curvature(Arc):	7°38'22"	_	
Length:	60.58		
Tangent:	30.31		
Chord:	60.56		
Middle Ordinate:	0.61		
External:	0.61		
Tangent Direction:	N 11°34'46" W		

Horizontal Alignment Name:

RAMP C

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PC (-125)	C 25+14.05	1057989.377	1063365.299
PI ()	C 26+14.09	1058088.684	1063353.191
CC (-66)		1058146.714	1064655.74
PT (-129)	C 27+13.74	1058188.67	1063356.42
Radius:	1300		
Delta:	8°48'04"	Right	
Degree of Curvature(Arc):	4°24'27"		
Length:	199.69		
Tangent:	100.04		
Chord:	199.49		
Middle Ordinate:	3.83		
External:	3.84		
Tangent Direction:	N 6°57'05" W		



Horizontal Alignment Name:

RAMP D

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC (-122)	D 1+57.14	1057750.576	1063488.163
PI ()	D 2+17.64	1057702.242	1063451.778
CC (-5)		1057780.647	1063448.217
PT (-123)	D 2+45.16	1057747.079	1063411.161
Radius:	50		
Delta:	100°51'18"	Right	
Degree of Curvature(Arc):	114°35'30"		
Length:	88.01		
Tangent:	60.5		
Chord:	77.08		
Middle Ordinate:	18.15		
External:	28.49		
Tangent Direction:	S 36°58'19" W		
Element: Circular	CURVE NO. 2		
PC (-7)	D 3+52.35	1057826.522	1063339.194
PI ()	D 5+51.48	1057974.1	1063205.505
CC (-124)		1058234.38	1063789.423
PT (-126)	D 7+37.20	1058172.181	1063185.117
Radius:	607.5		
Delta:	36°17'48"	Right	
Degree of Curvature(Arc):	9°25'53"		
Length:	384.85		
Tangent:	199.13		
Chord:	378.44		
Middle Ordinate:	30.22		
External:	31.8		
	N 42°10'23" W		Ì

Horizontal Alignment Name:

RAMP D

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PC (-10)	D 10+52.12	1058485.094	1063149.894
PI ()	D 10+95.72	1058528.471	1063145.43
CC (-18)		1058556.763	1063846.216
PT (-95)	D 11+39.22	1058572.067	1063146.383
Radius:	700		
Delta:	7°07'45"	Right	
Degree of Curvature(Arc):	8°11'06"		
Length:	87.1		
Tangent:	43.61		
Chord:	87.04		
Middle Ordinate:	1.35		
External:	1.36		
Tangent Direction:	N 5°52'36" W		
Element: Circular	CURVE NO. 4		
PC (-17)	D 13+41.10	1058773.902	1063150.797
PI ()	D 14+34.32	1058867.099	1063152.835
CC (-127)		1058894.691	1057627.117
PT ()	D 15+27.52	1058960.311	1063151.728
Radius:	5525		
Delta:	1°56'00"	Left	
Degree of Curvature(Arc):	1°02'13"		
Length:	186.42		
Tangent:	93.22		
Chord:	186.41		
Middle Ordinate:	0.79		
External:	0.79		
Tangent Direction:	N 1°15'10" E		

Horizontal Alignment Name:

RAMP NE

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC (-167)	NE 11+13.27	1056994.249	1063659.211
PI ()	NE 12+14.79	1057077.224	1063600.717
CC (-173)		1057602.189	1064521.584
PT (-174)	NE 13+15.69	1057169.829	1063559.116
Radius:	1055.12		
Delta:	10°59'30"	Right	
Degree of Curvature(Arc):	5°25'49"		
Length:	202.42		
Tangent:	101.52		
Chord:	202.11		
Middle Ordinate:	4.85		
External:	4.87		
Tangent Direction:	N 35°10'56" W		
Element: Circular	CURVE NO. 2		
PC (-68)	NE 14+38.56	1057281.913	1063508.766
PI ()	NE 14+69.21	1057309.865	1063496.21
CC (-69)		1057524.127	1064047.954
PT (-70)	NE 14+99.79	1057338.965	1063486.611
Radius:	591.09		
Delta:	5°56'07"	Right	
Degree of Curvature(Arc):	9°41'35"		
Length:	61.23		
Tangent:	30.64		
Chord:	61.2		
Middle Ordinate:	0.79		
External:	0.79		
Tangent Direction:	N 24°11'26" W		

Horizontal Alignment Name:

RAMP NE

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PC (-71)	NE 17+73.04	1057598.46	1063401.015
PI ()	NE 20+26.69	1057839.34	1063321.56
CC (-73)		1058146.653	1065062.94
PT (-74)	NE 22+76.82	1058092.87	1063313.764
Radius:	1750		
Delta:	16°29'39"	Right	
Degree of Curvature(Arc):	3°16'27"		
Length:	503.78		
Tangent:	253.65		
Chord:	502.05		
Middle Ordinate:	18.1		
External:	18.29		
Tangent Direction:	N 18°15'19" W		
Element: Circular	CURVE NO. 4		
PC (-75)	NE 22+89.40	1058105.436	1063313.377
PI ()	NE 23+31.73	1058147.75	1063312.076
CC (-66)		1058146.714	1064655.74
PT (-130)	NE 23+74.04	1058190.06	1063313.443
Radius:	1343		
Delta:	3°36'39"	Right	
Degree of Curvature(Arc):	4°15'59"		
Length:	84.64		
Tangent:	42.33		
Chord:	84.63		
Middle Ordinate:	0.67		
External:	0.67		
Tangent Direction:	N 1°45'41" W		

Horizontal Alignment Name:

RAMP P

P 0+63.74 P 1+23.09 P 1+71.38 102.71 60°02'53" 55°47'12" 107.64 59.35 102.78 13.78	1056425.627 1056411.274 1056525.284 1056454.008	1064156.846 1064099.254 1064132.009 1064058.063
P 0+63.74 P 1+23.09 P 1+71.38 102.71 60°02'53" 55°47'12" 107.64 59.35 102.78	1056411.274 1056525.284 1056454.008	1064099.254 1064132.009
P 1+23.09 P 1+71.38 102.71 60°02'53" 55°47'12" 107.64 59.35 102.78	1056411.274 1056525.284 1056454.008	1064099.254 1064132.009
P 1+71.38 102.71 60°02'53" 55°47'12" 107.64 59.35 102.78	1056525.284 1056454.008	1064132.009
102.71 60°02'53" 55°47'12" 107.64 59.35 102.78	1056454.008	
102.71 60°02'53" 55°47'12" 107.64 59.35 102.78		1064058.063
60°02'53" 55°47'12" 107.64 59.35 102.78	Right	
55°47'12" 107.64 59.35 102.78	Right	
107.64 59.35 102.78		
59.35 102.78		
102.78		1
13 78		
13.70		
15.92		
S 76°00'20" W		
CURVE NO. 2		
P 1+71.38	1056454.008	1064058.063
P 2+31.62	1056497.382	1064016.256
	1055884.942	1063467.67
P 2+91.64	1056534.18	1063968.559
820		
8°24'12"	Left	
6°59'14"		
120.27		
60.24		
120.16		
2.2		
2.21		
	P 2+31.62 P 2+91.64 820 8°24'12" 6°59'14" 120.27 60.24 120.16 2.2 2.21	P 2+31.62 1056497.382 1055884.942 P 2+91.64 1056534.18 820 8°24'12" Left 6°59'14" 120.27 60.24 120.16 2.2

Horizontal Alignment Name:

RAMP P

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PRC (-25)	P 2+91.64	1056534.18	1063968.559
PI ()	P 3+07.32	1056543.758	1063956.144
CC ()		1056862.054	1064221.514
PT (-26)	P 3+22.99	1056554.247	1063944.49
Radius:	414.11		
Delta:	4°20'13"	Right	
Degree of Curvature(Arc):	13°50'09"		
Length:	31.34		
Tangent:	15.68		
Chord:	31.34		
Middle Ordinate:	0.3		
External:	0.3		
Tangent Direction:	N 52°20'59" W		



Horizontal Alignment Name:

RAMP PN

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC ()	PN 12+21.79	1056501.727	1064391.91
PI ()	PN 13+69.67	1056417.989	1064270.028
CC ()		1056707.782	1064250.342
PT ()	PN 14+88.87	1056484.475	1064137.941
Radius:	250		
Delta:	61°12'33"	Right	
Degree of Curvature(Arc):	22°55'06"		
Length:	267.08		
Tangent:	147.88		
Chord:	254.55		
Middle Ordinate:	34.82		
External:	40.46		
Tangent Direction:	S 55°30'33" W		
Element: Circular	CURVE NO. 2		
PC ()	PN 15+51.82	1056512.779	1064081.709
PI ()	PN 16+84.29	1056572.339	1063963.382
CC ()		1056829.875	1064241.319
PRC ()	PN 18+05.40	1056694.855	1063912.998
Radius:	355		
Delta:	40°55'37"	Right	
Degree of Curvature(Arc):	16°08'23"		
Length:	253.58		
Tangent:	132.47		
Chord:	248.22		
Middle Ordinate:	22.4		
External:	23.91		
Tangent Direction:	N 63°16'54" W		

Horizontal Alignment Name:

RAMP PN

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PRC ()	PN 18+05.40	1056694.855	1063912.998
PI ()	PN 18+88.63	1056771.831	1063881.342
CC ()		1056413.253	1063228.24
PT ()	PN 19+71.17	1056839.857	1063833.386
Radius:	740.4		
Delta:	12°49'40"	Left	
Degree of Curvature(Arc):	7°44'19"		
Length:	165.77		
Tangent:	83.23		
Chord:	165.42		
Middle Ordinate:	4.63		
External:	4.66		
Tangent Direction:	N 22°21'16" W		
Flame anti-Ginavian	CUDVE NO. 4		
Element: Circular	CURVE NO. 4	4057047.202	4062700 200
PRC ()	PN 21+88.24	1057017.282	1063708.309
PI ()	PN 22+89.06	1057099.683	1063650.219
CC (-155)	21122 22 22	1057593.462	1064525.631
PT ()	PN 23+89.20	1057192.021	1063609.746
Radius:	1000		
Delta:	11°30'51"	Right	
Degree of Curvature(Arc):	5°43'46"		
Length:	200.96		
Tangent:	100.82		
Chord:	200.62		
Middle Ordinate:	5.04		
External:	5.07		
Tangent Direction:	N 35°10'56" W		

Horizontal Alignment Name:

SHORELINE TRAIL

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC (-32)	SLT 6+79.47	1057720.514	1063060.477
PI ()	SLT 8+36.76	1057870.926	1063014.471
CC ()		1058086.131	1064255.812
PT (-35)	SLT 9+92.40	1058028.047	1063007.162
Radius:	1250		
Delta:	14°20'38"	Right	
Degree of Curvature(Arc):	4°35'01"		
Length:	312.94		
Tangent:	157.29		
Chord:	312.12		
Middle Ordinate:	9.78		
External:	9.86		
Tangent Direction:	N 17°00'26" W		
Element: Circular	CURVE NO. 2		
PC (-884)	SLT 11+26.07	1058161.57	1063000.951
PI ()	SLT 11+39.77	1058175.255	1063000.314
CC (-887)		1058147.629	1062701.275
PT (-888)	SLT 11+53.45	1058188.826	1062998.433
Radius:	300		
Delta:	5°13'46"	Left	
Degree of Curvature(Arc):	19°05'55"		
Length:	27.38		
Tangent:	13.7		
Chord:	27.37		
Middle Ordinate:	0.31		
External:	0.31		
Tangent Direction:	N 2°39'48" W		

Horizontal Alignment Name: SHORELINE TRAIL

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 3		
PC (-885)	SLT 11+61.11	1058196.412	1062997.381
PI ()	SLT 11+99.53	1058234.473	1062992.105
CC (-889)		1058223.876	1063195.486
PT (-890)	SLT 12+37.03	1058271.779	1063001.308
Radius:	200		
Delta:	21°45'03"	Right	
Degree of Curvature(Arc):	28°38'52"		
Length:	75.92		
Tangent:	38.42		
Chord:	75.47		
Middle Ordinate:	3.59		
External:	3.66		
Tangent Direction:	N 7°53'34" W		
Element: Circular	CURVE NO. 4		
PC (-142)	SLT 12+96.70	1058329.704	1063015.598
PI ()	SLT 13+18.01	1058350.4	1063020.703
CC (-886)		1058377.607	1062821.419
PT (-891)	SLT 13+39.17	1058371.707	1063021.332
Radius:	200		
Delta:	12°10'03"	Left	
Degree of Curvature(Arc):	28°38'52"		
Length:	42.47		
Tangent:	21.32		
Chord:	42.39		
Middle Ordinate:	1.13		
External:	1.13		
Tangent Direction:	N 13°51'28" E		

Horizontal Alignment Name:

SHORELINE TRAIL

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 5		
PC ()	SLT 17+23.02	1058755.387	1063032.655
PI ()	SLT 17+58.87	1058791.227	1063033.712
CC ()		1058754.296	1063069.638
PT (-28)	SLT 17+79.97	1058791.295	1063069.568
Radius:	37		
Delta:	88°12'03"	Right	
Degree of Curvature(Arc):	154°51'12"		
Length:	56.96		
Tangent:	35.86		
Chord:	51.5		
Middle Ordinate:	10.43		
External:	14.52		
Tangent Direction:	N 1°41'25" E		
Element: Circular	CURVE NO. 6		
PC (-29)	SLT 19+37.53	1058791.595	1063227.121
PI ()	SLT 19+79.09	1058791.674	1063268.683
CC ()		1058836.595	1063227.035
PT (-31)	SLT 20+04.64	1058833.111	1063271.9
Radius:	45		
Delta:	85°27'03"	Left	
Degree of Curvature(Arc):	127°19'26"		
Length:	67.11		
Tangent:	41.56		
Chord:	61.06		
Middle Ordinate:	11.94		
External:	16.26		
Tangent Direction:	N 89°53'28" E		

Horizontal Alignment Name:

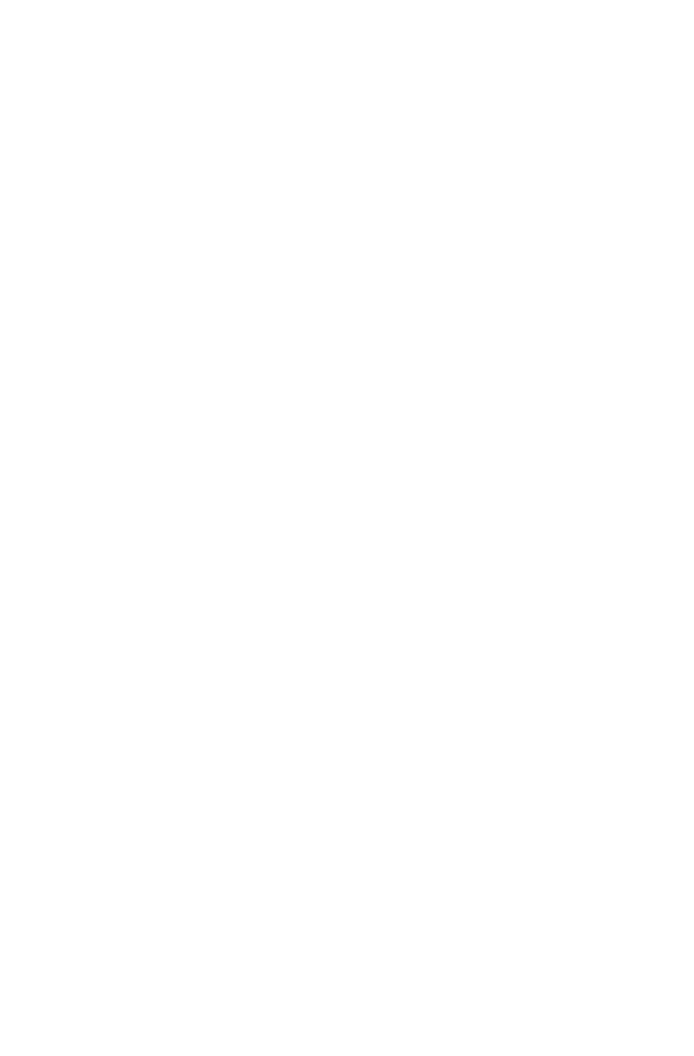
PARK ROAD

	STATION	NORTHING	EASTING
Element: Circular	CURVE NO. 1		
PC ()	PK 1+73.14	1056787.673	1064543.001
PI ()	PK 2+17.53	1056824.423	1064518.109
CC ()		1056746.174	1064481.733
PT (-128)	PK 2+53.11	1056819.765	1064473.967
Radius:	74		
Delta:	61°54'46"	Left	
Degree of Curvature(Arc):	77°25'36"		
Length:	79.96		
Tangent:	44.39		
Chord:	76.13		
Middle Ordinate:	10.54		
External:	12.29		
Tangent Direction:	N 34°06'41" W		
Element: Circular	CURVE NO. 2		
PC (-128)	PK 2+53.11	1056819.765	1064473.967
PI ()	PK 3+90.53	1056805.343	1064337.301
CC ()		1057103.191	1064444.058
PT ()	PK 5+09.21	1056903.298	1064240.913
Radius:	285		
Delta:	51°29'10"	Right	
Degree of Curvature(Arc):	20°06'14"		
Length:	256.1		
Tangent:	137.43		
Chord:	247.57		
N 41 L 11 CO 11 L	28.29		
Middle Ordinate:		<u> </u>	i
Middle Ordinate: External:	31.4		

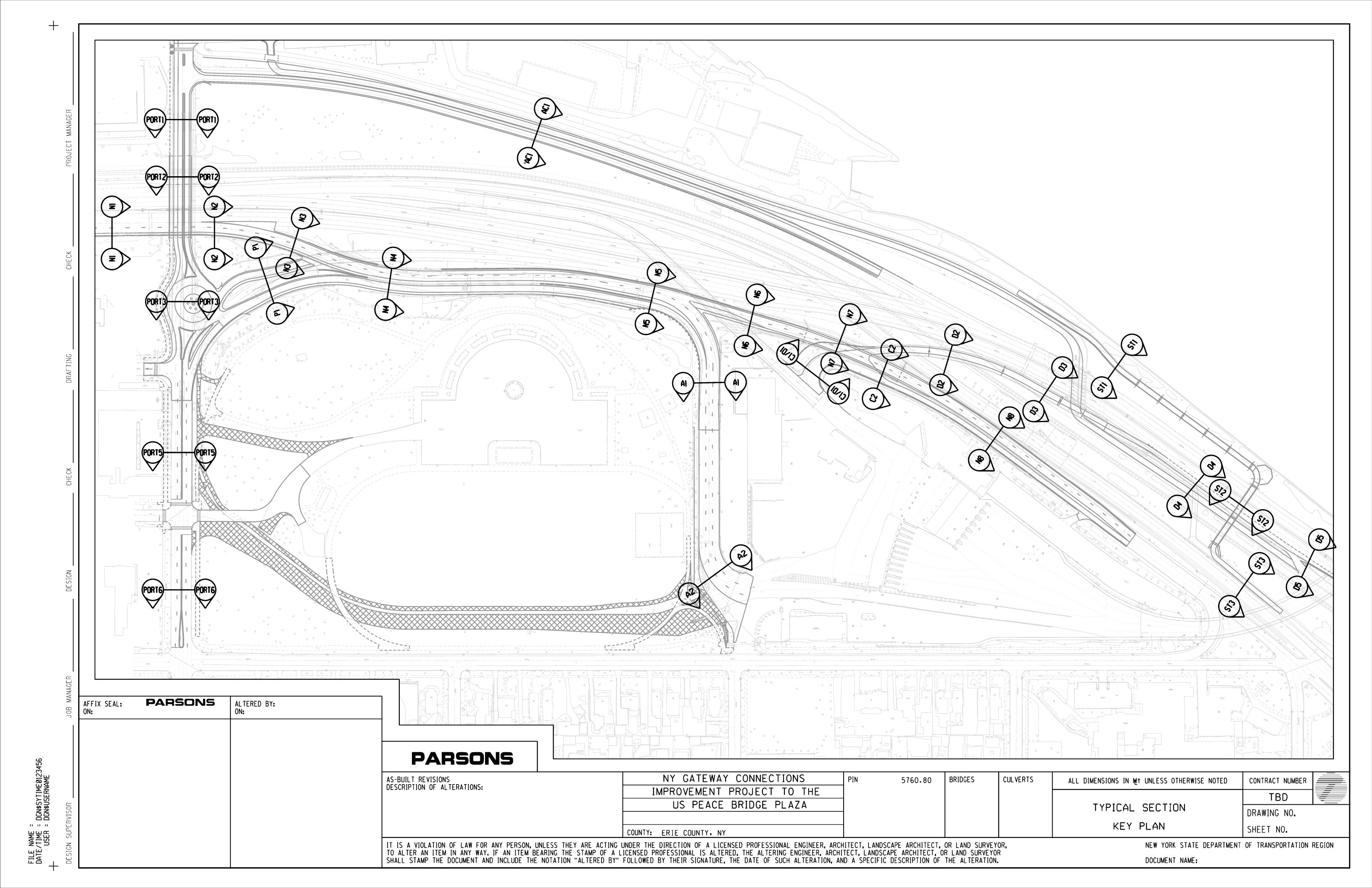
Horizontal Alignment Name:

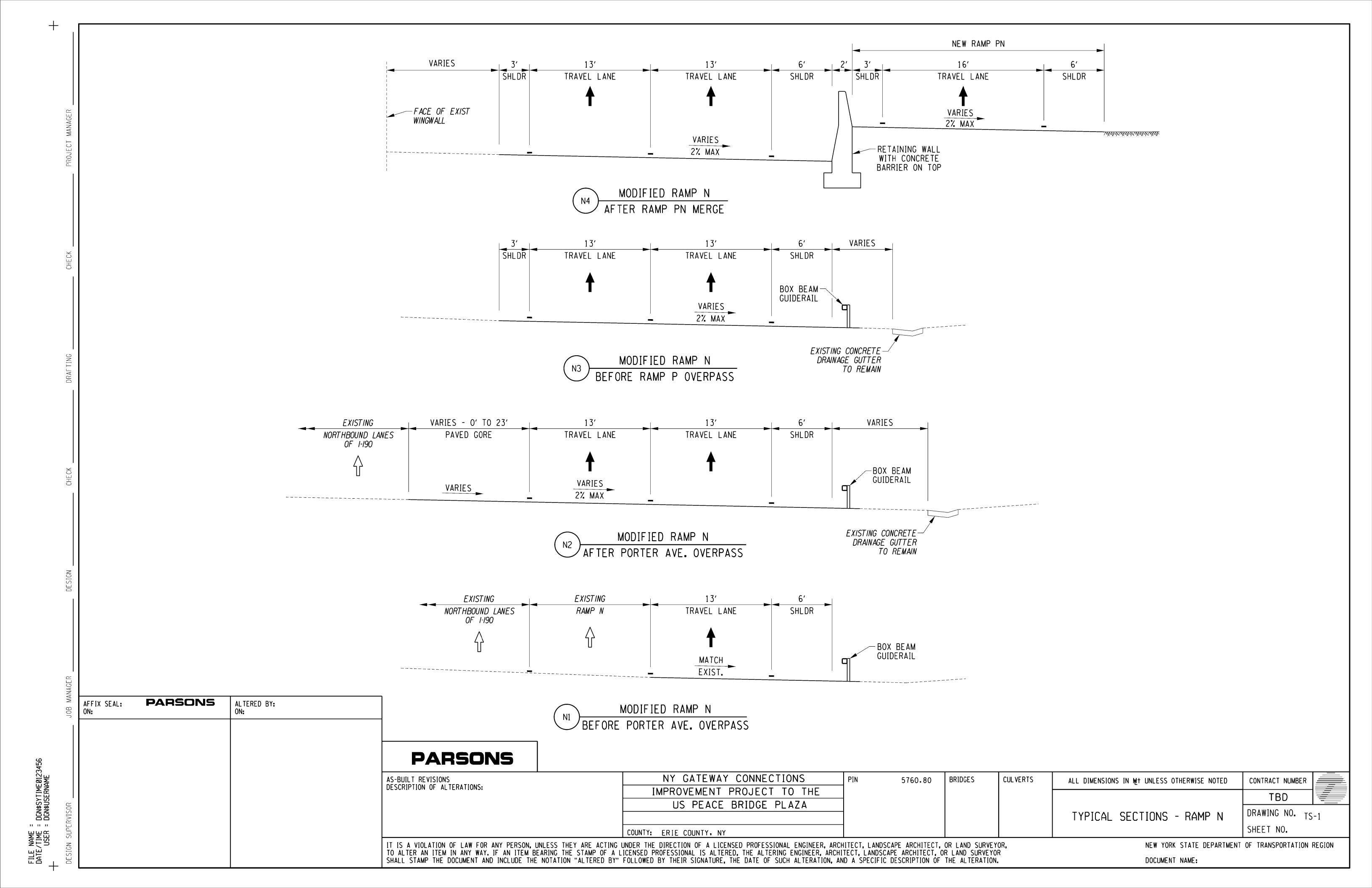
PORTER AVENUE

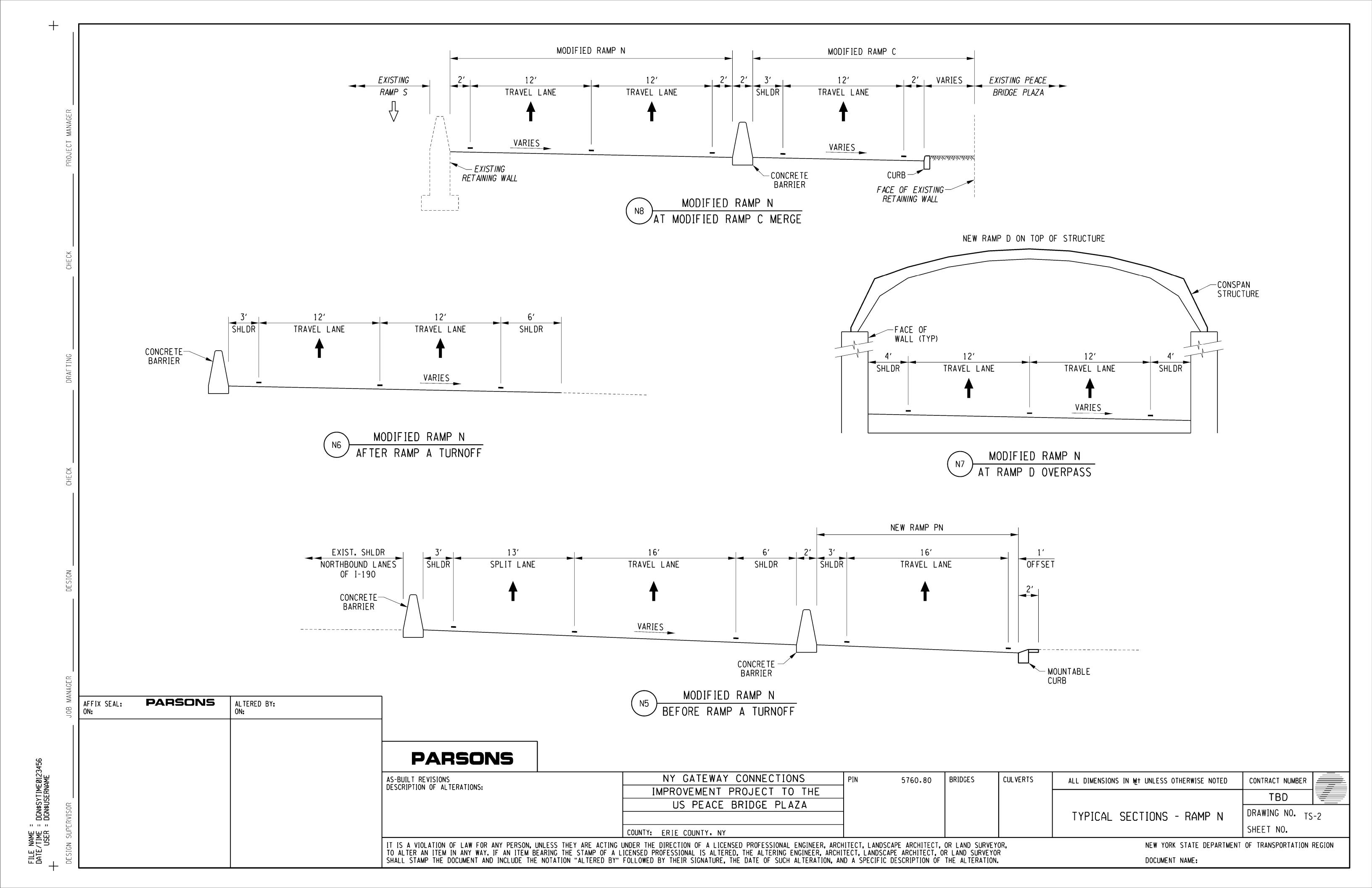
	STATION	NORTHING	EASTING
Element: Linear			
POB (-81)	6+82.82	1055662.996	1063217.373
EQNBK ()	6+82.83	1055663	1063217.38
EQNAHD ()	PA 6+82.83	1055663	1063217.38
PI (-3)	PA 12+78.46	1056003.156	1063706.328
Tangent Direction:	N 55°10'27" E		
Tangent Length:	595.64		
Element: Linear			
PI (-3)	PA 12+78.46	1056003.156	1063706.328
POE (-2)	PA 35+90.04	1057311.612	1065611.931
Tangent Direction:	N 55°31'30" E		
Tangent Length:	2311.58		

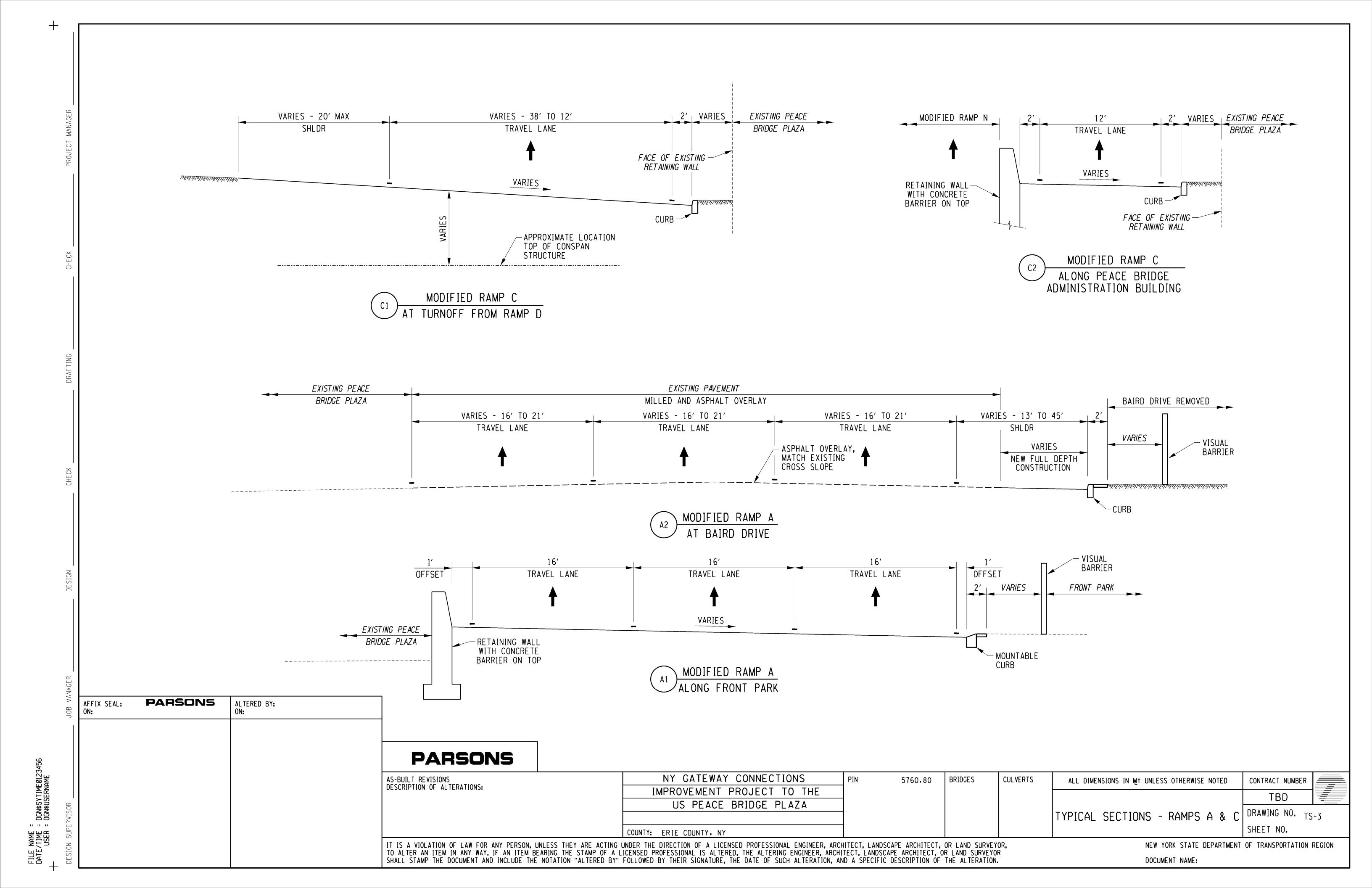


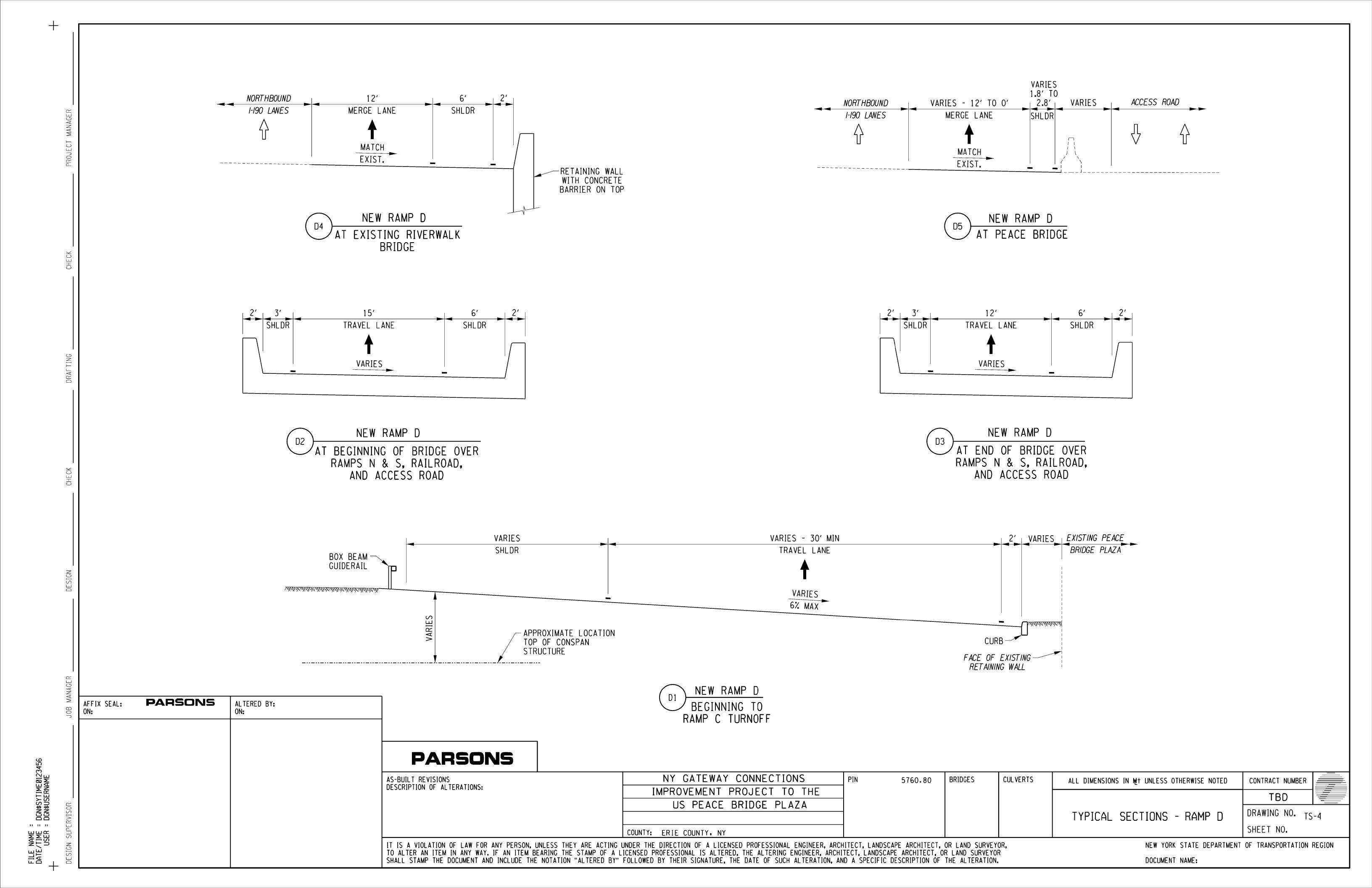
4. Typical Sections

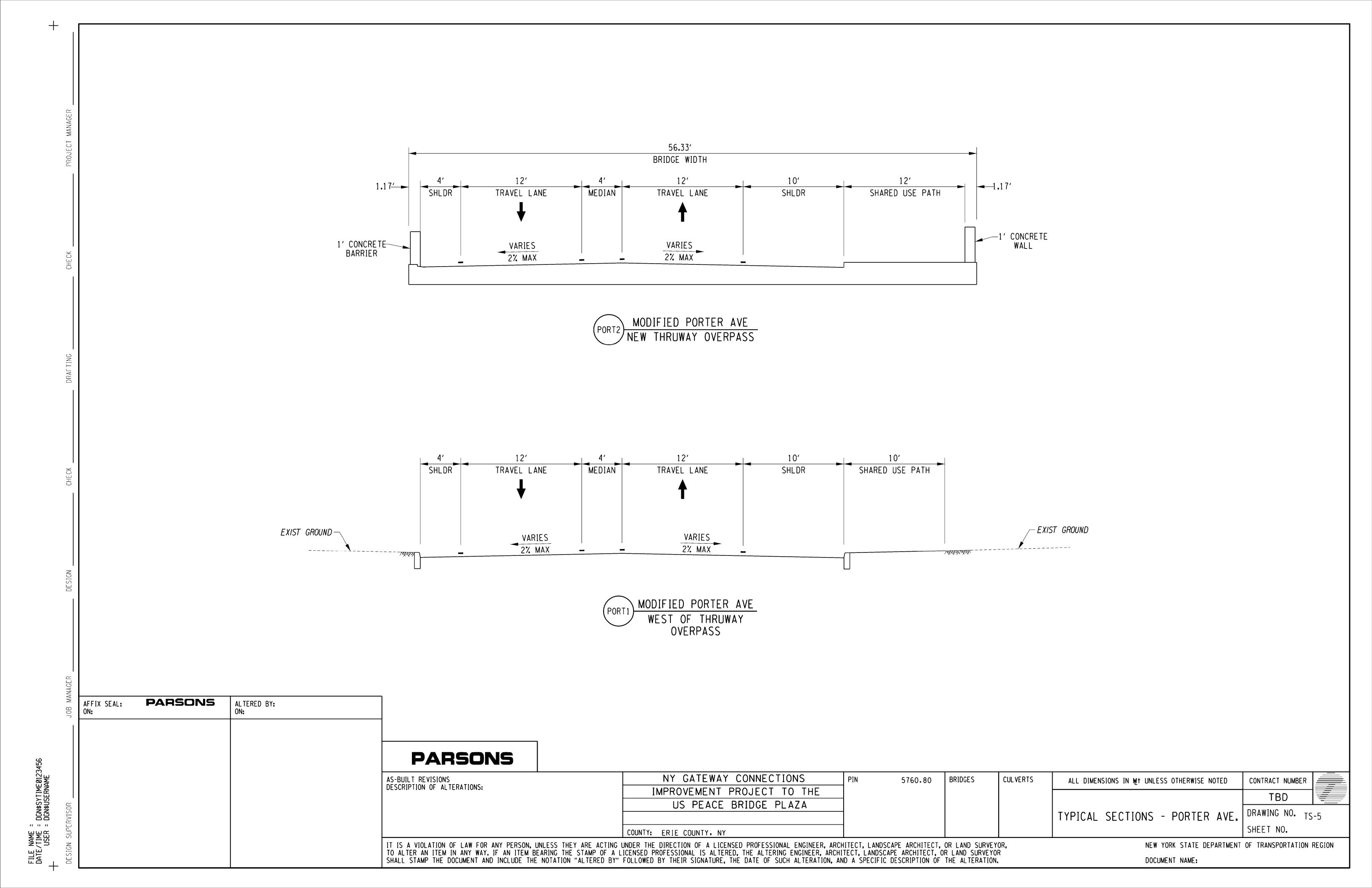


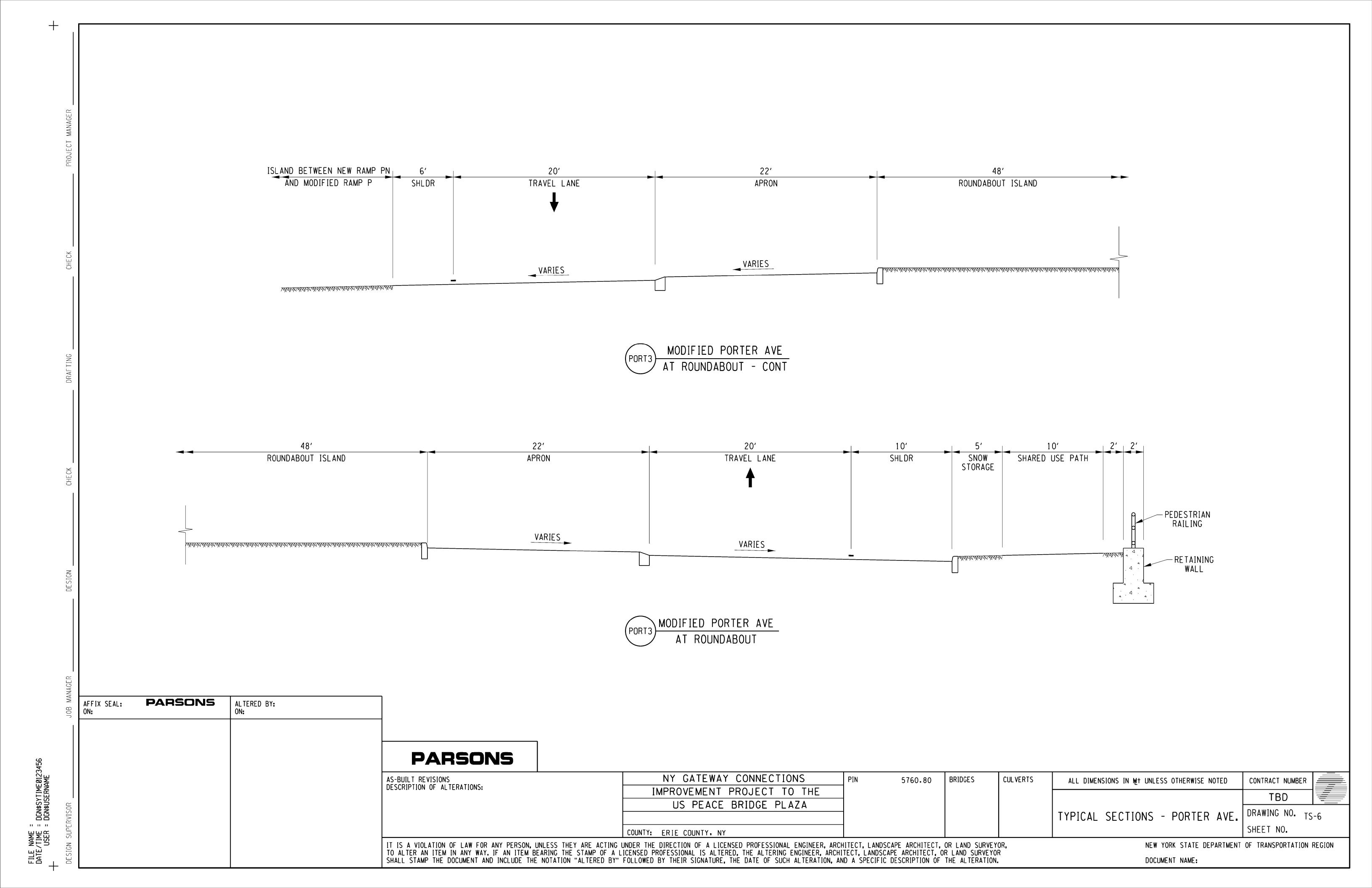


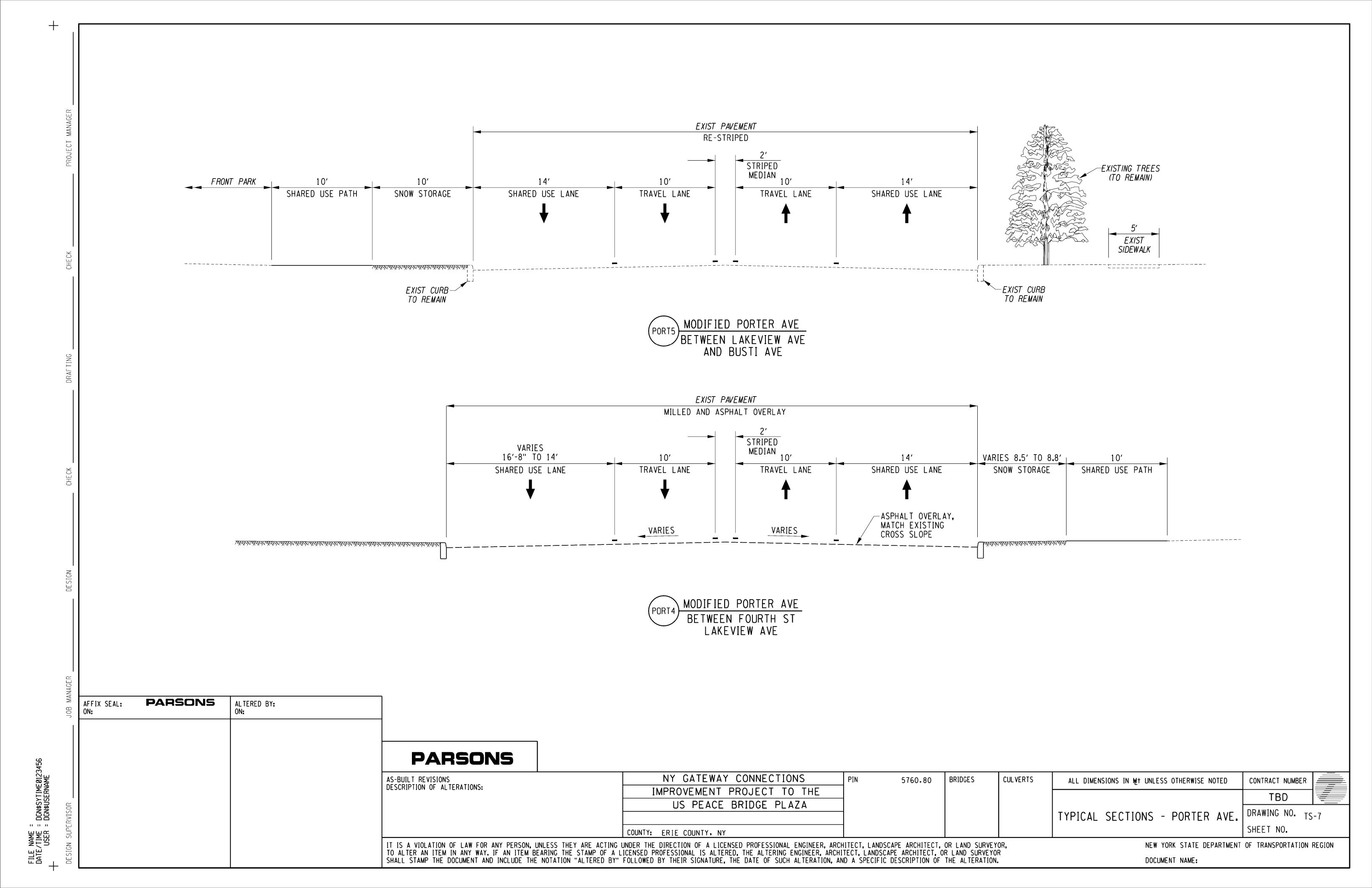


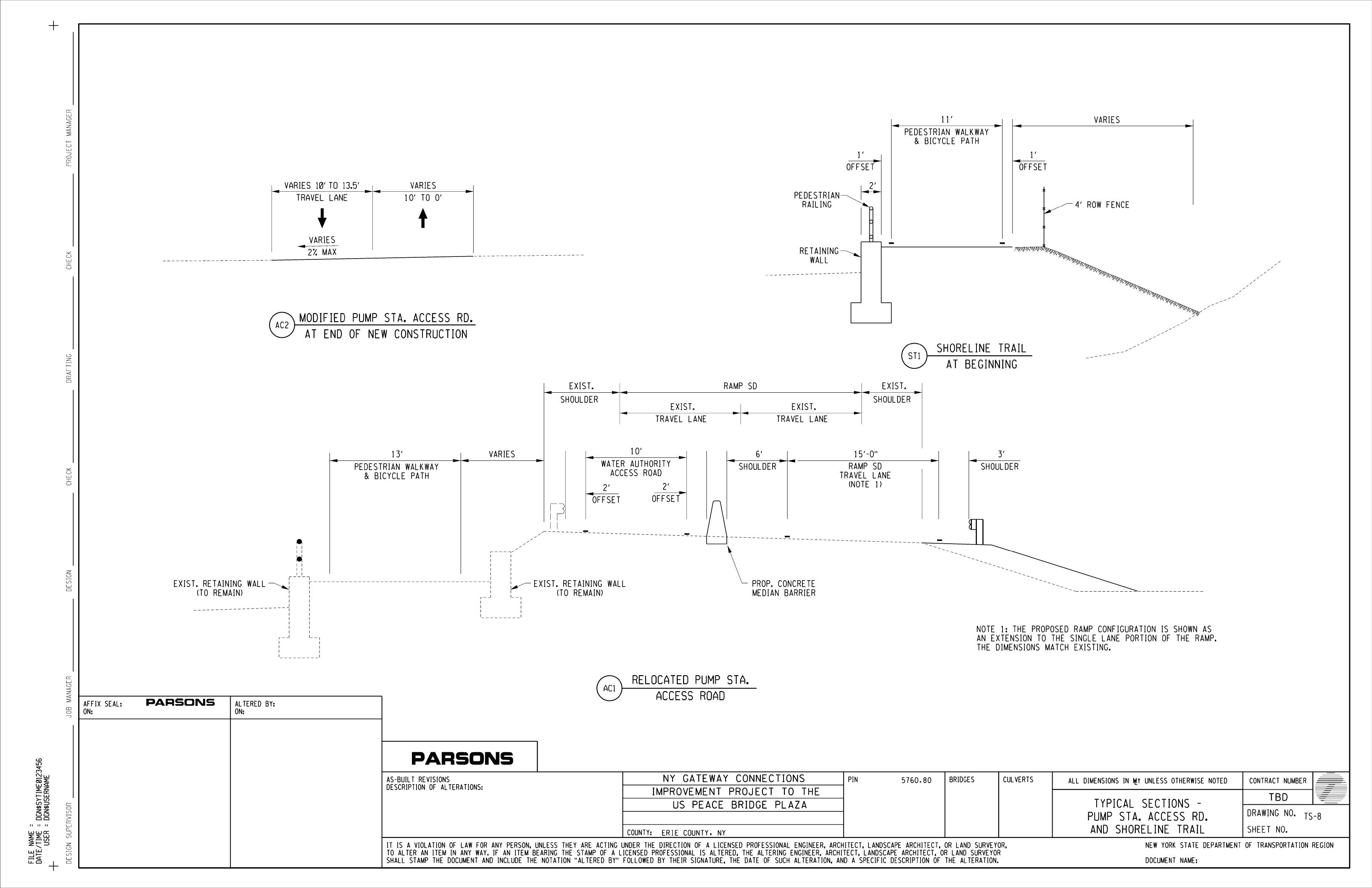


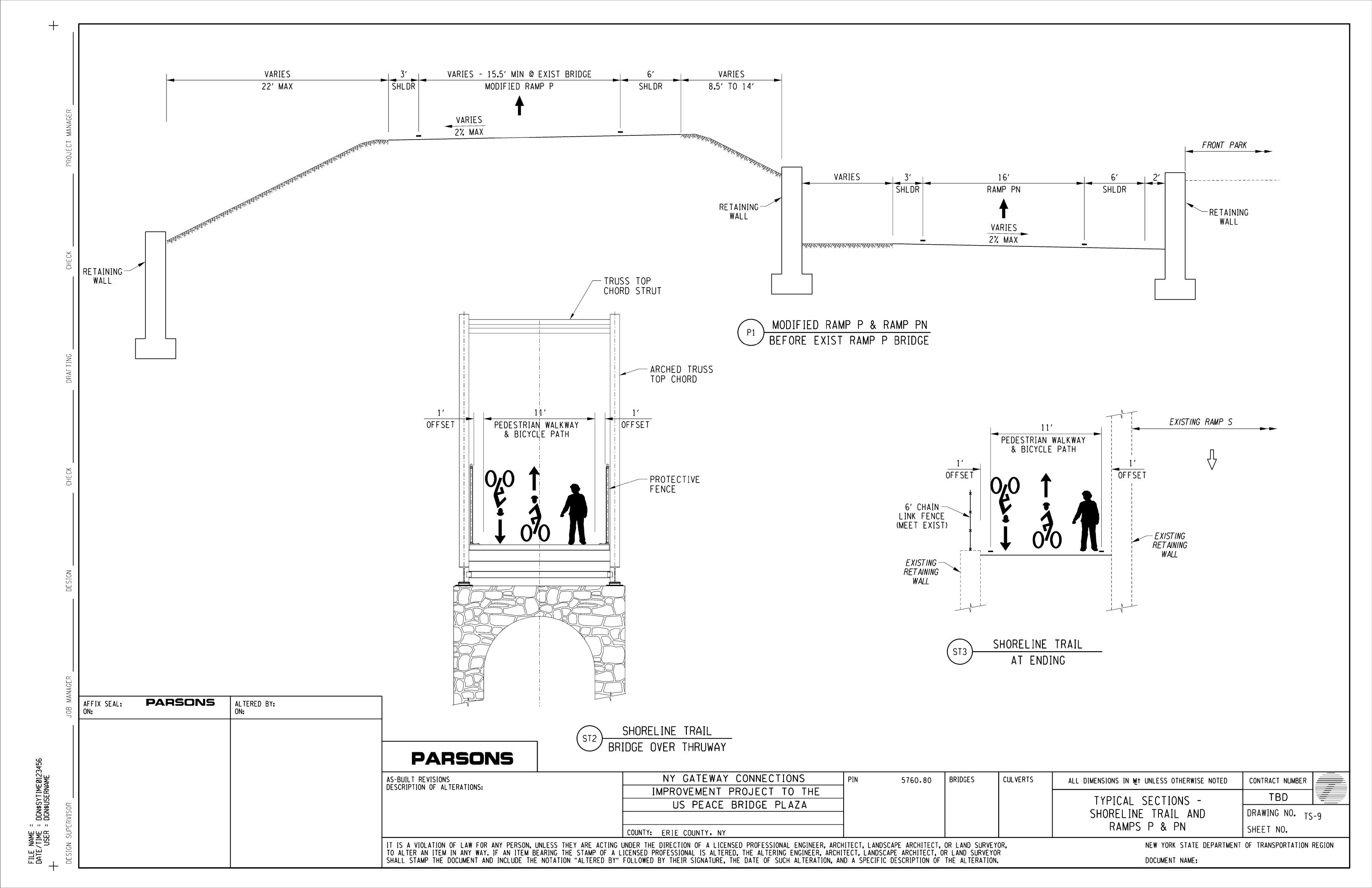




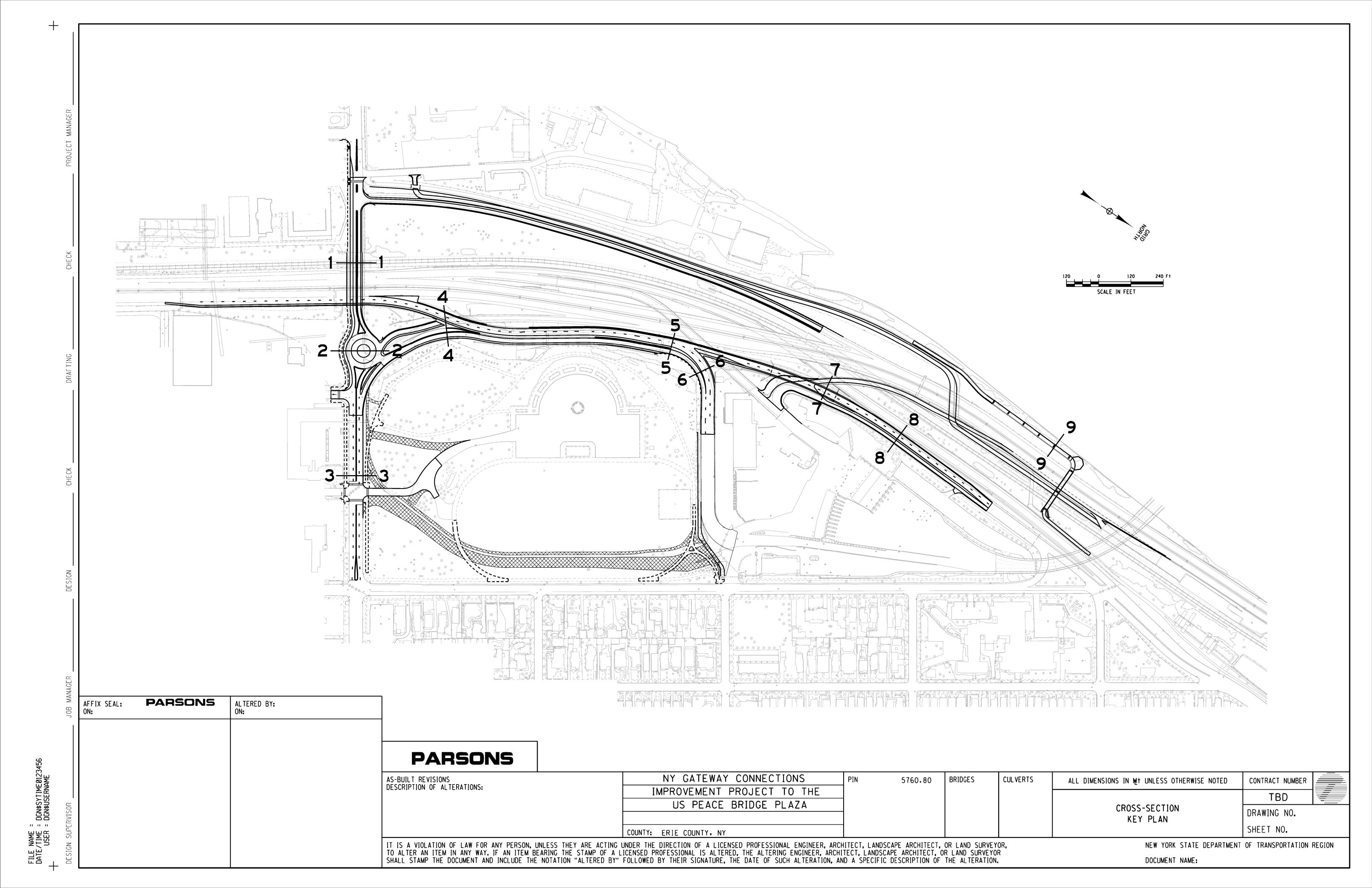


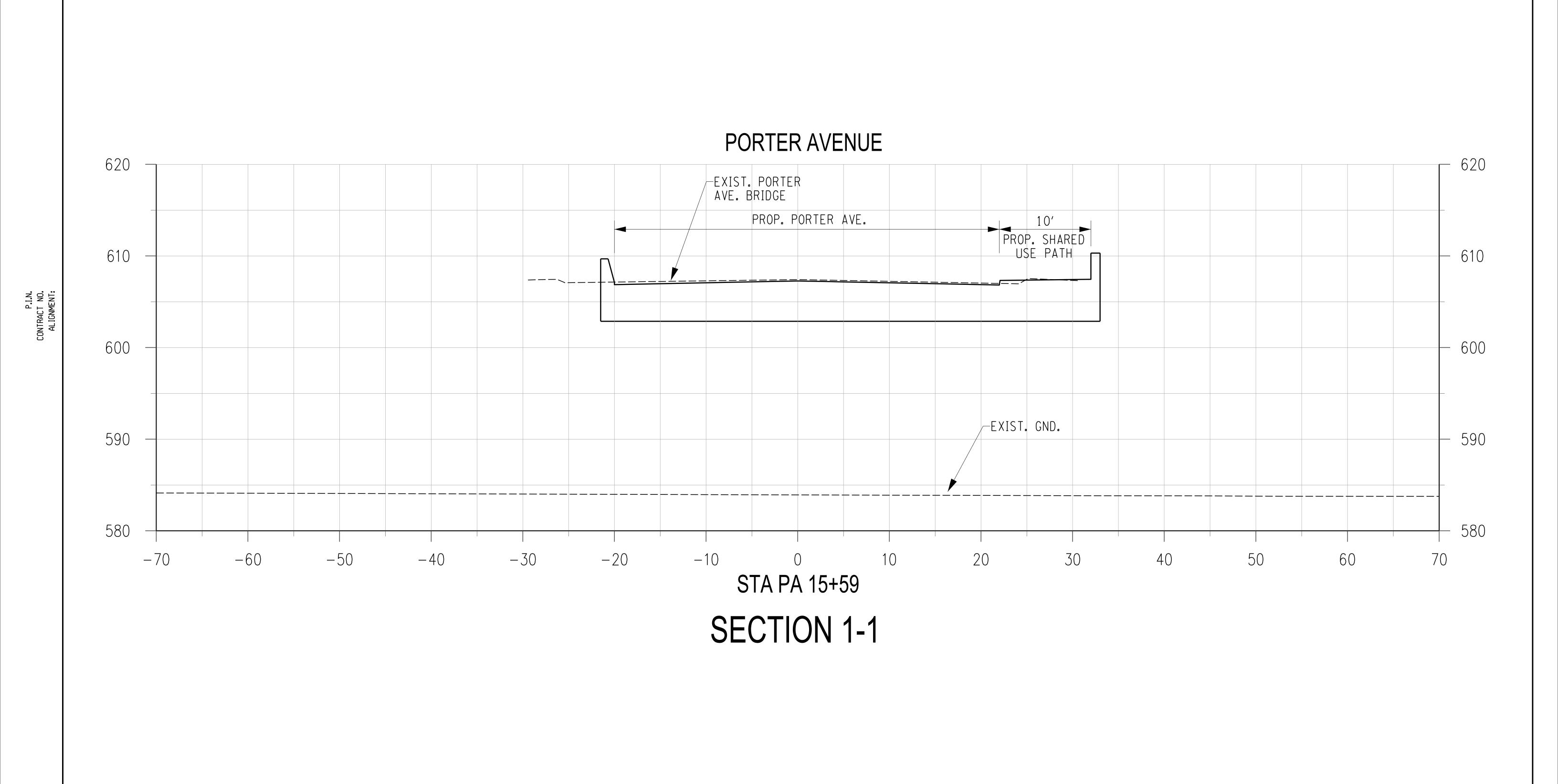


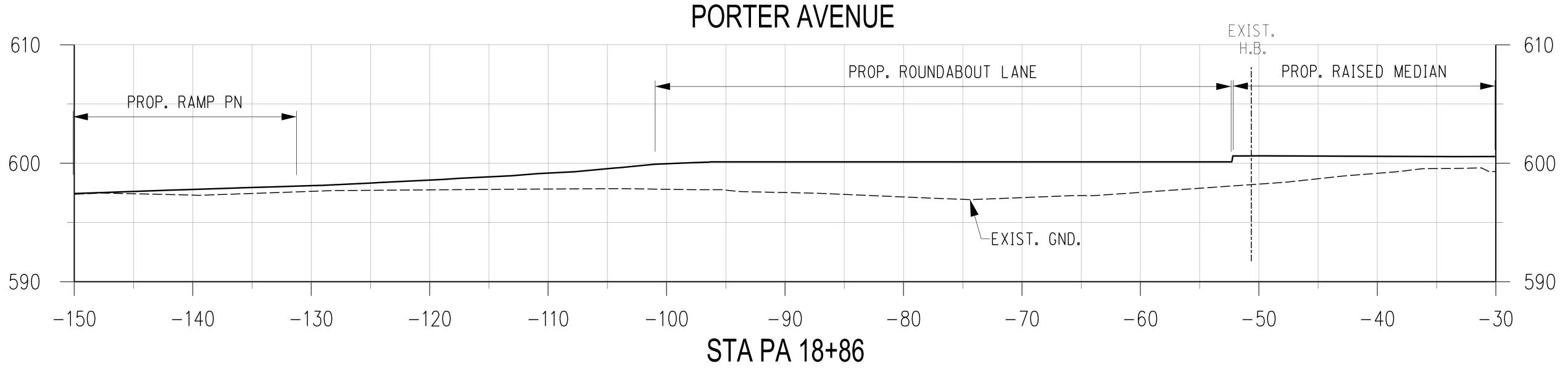




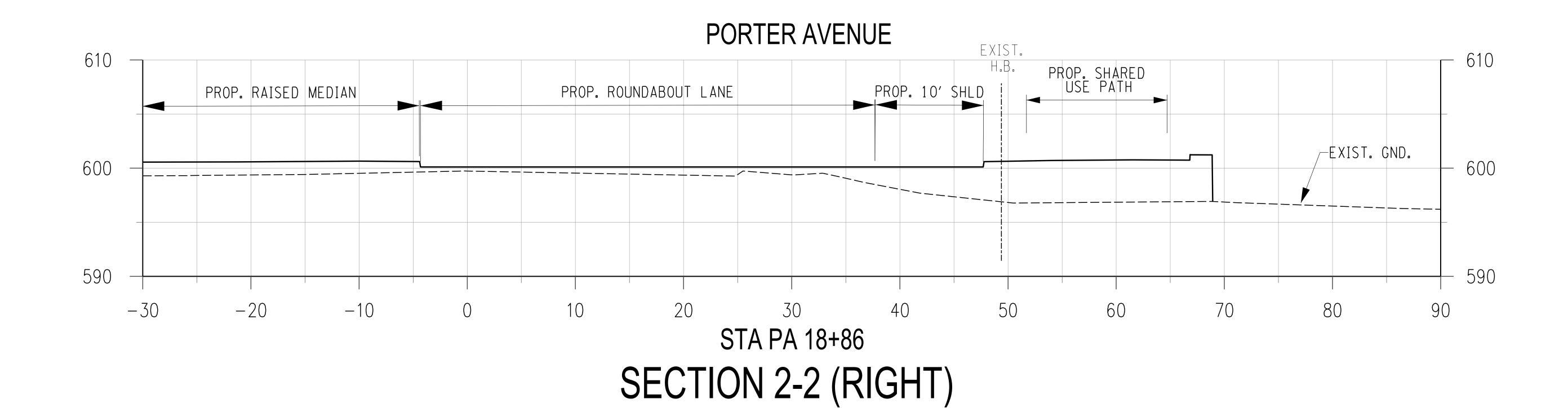
5. Cross Sections at Critical Locations

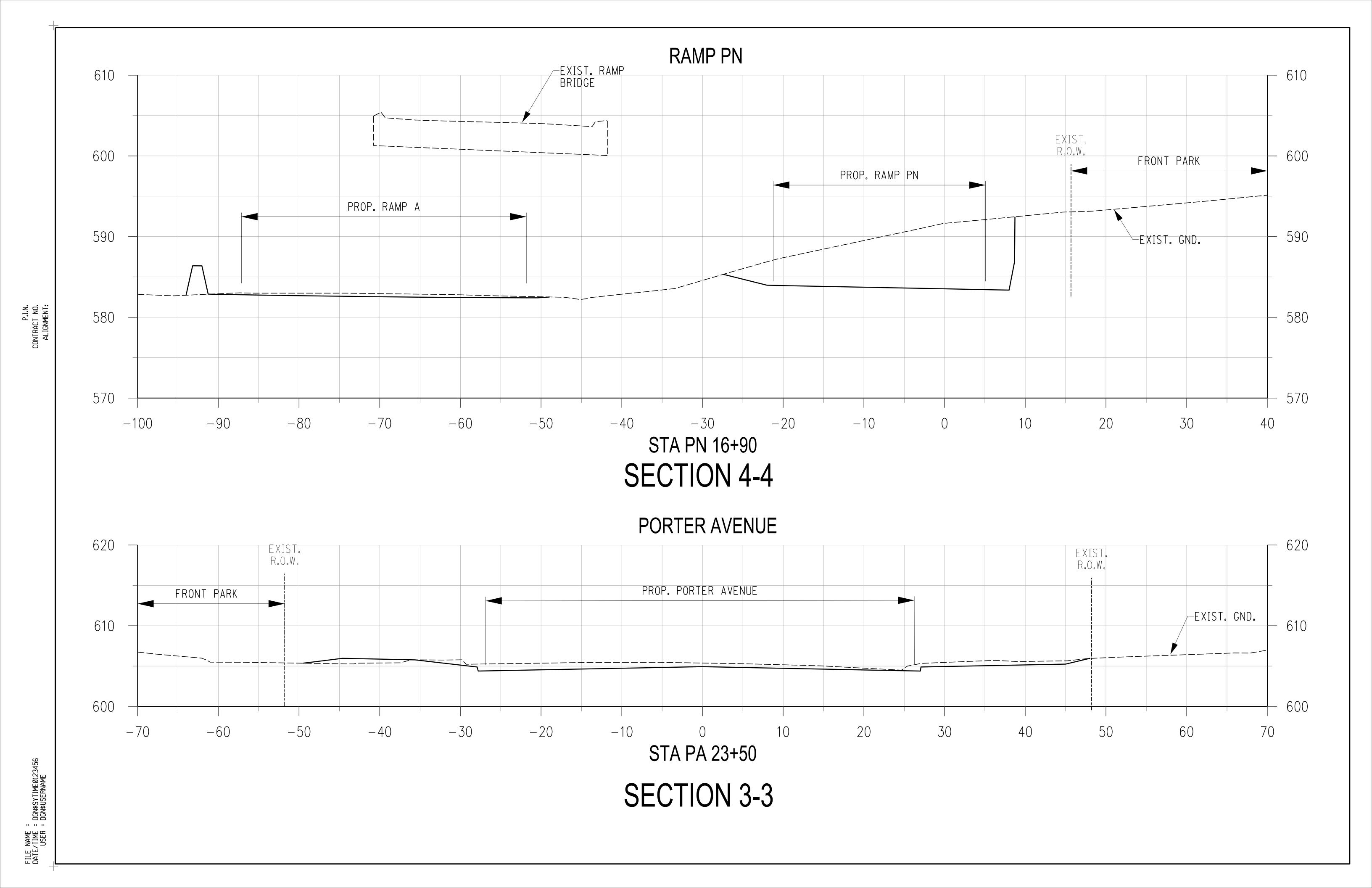


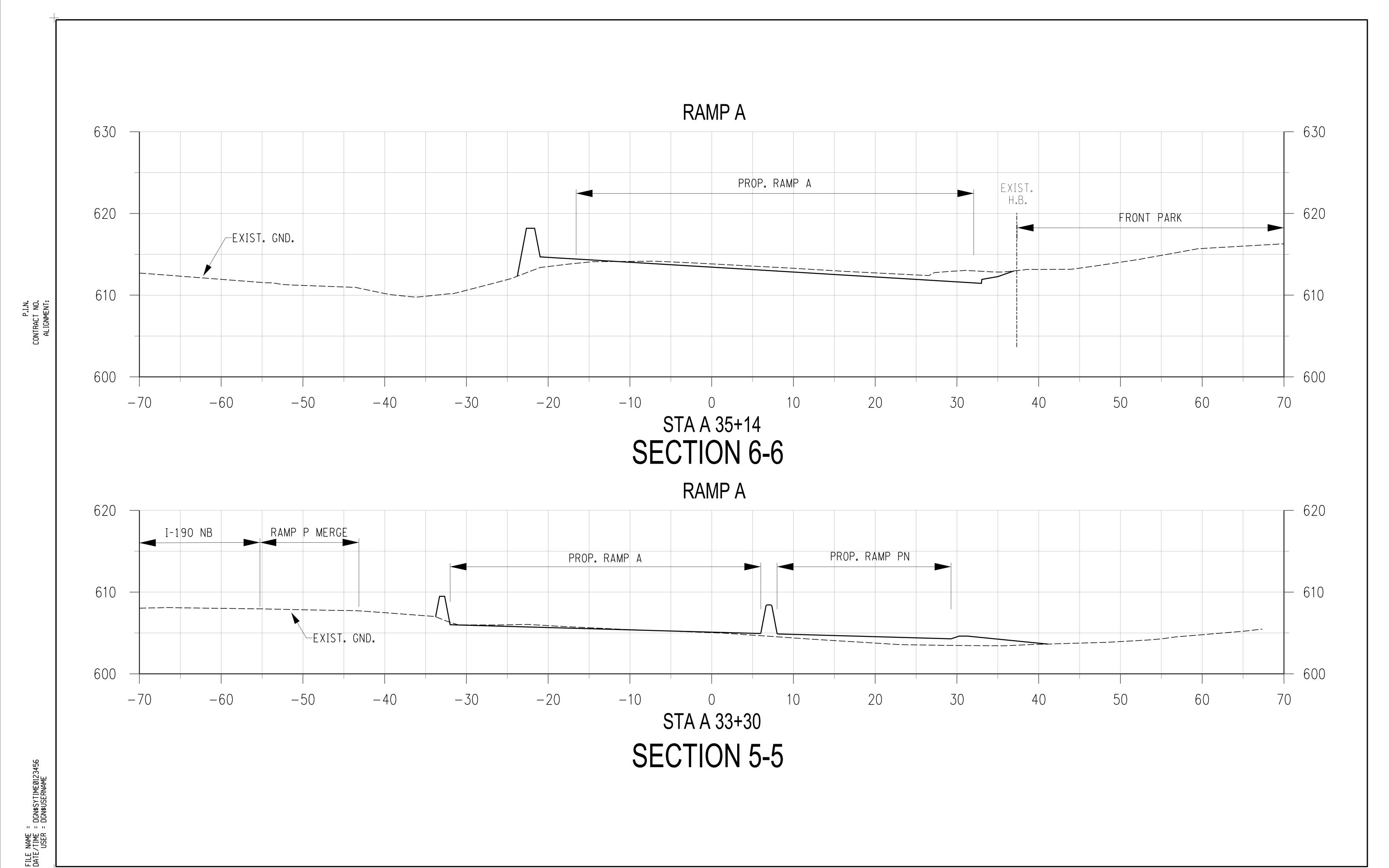


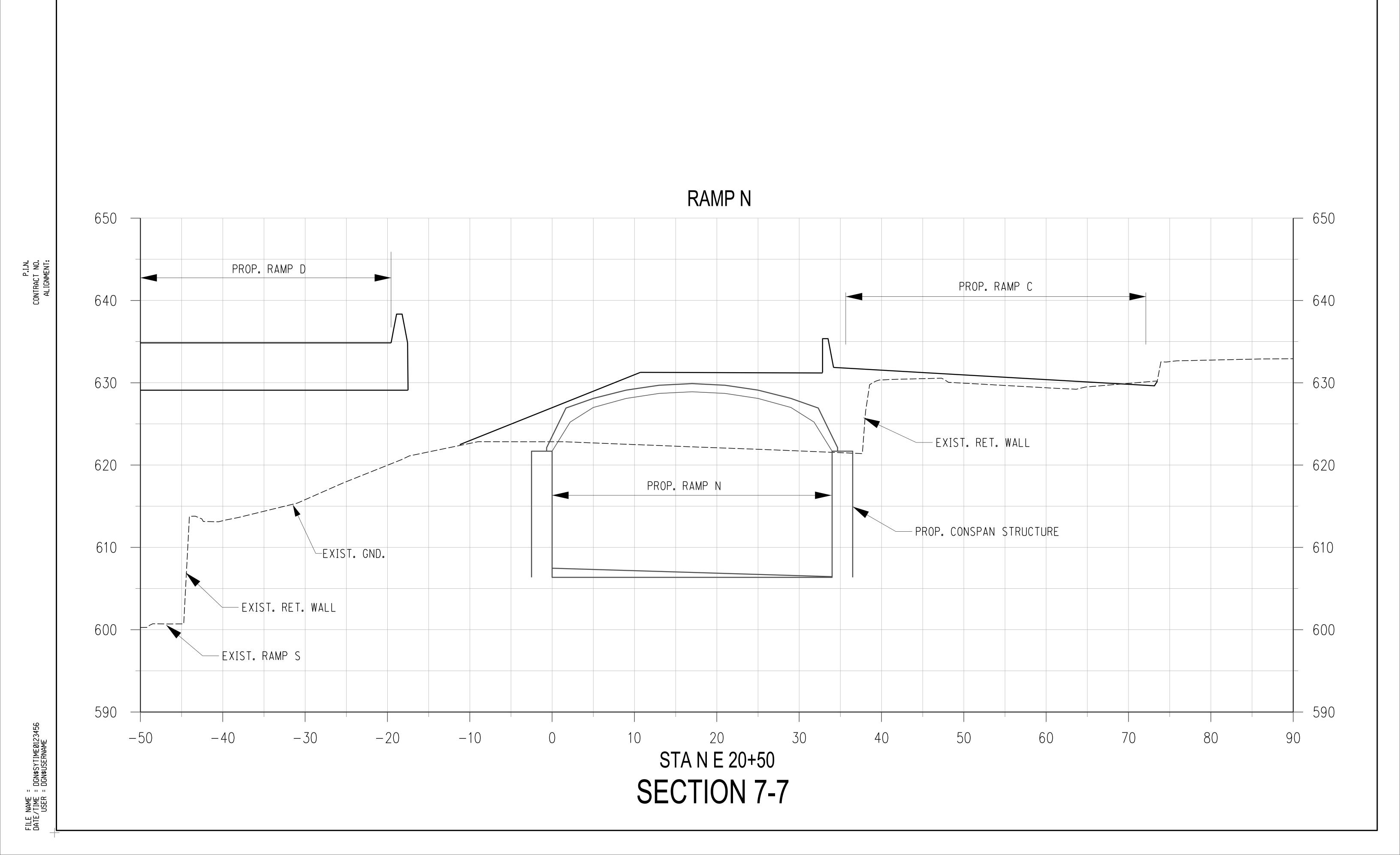


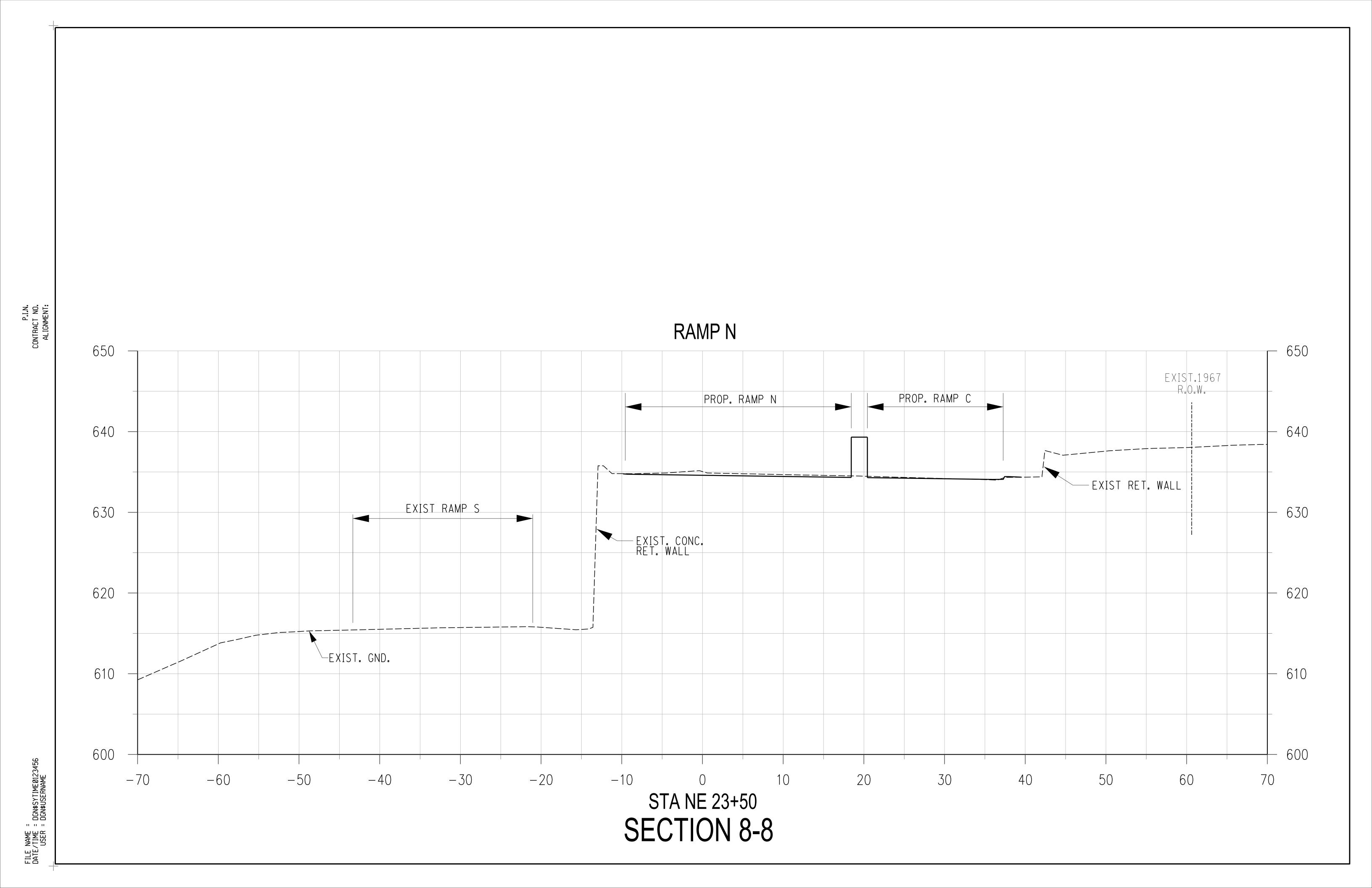
SECTION 2-2 (LEFT)

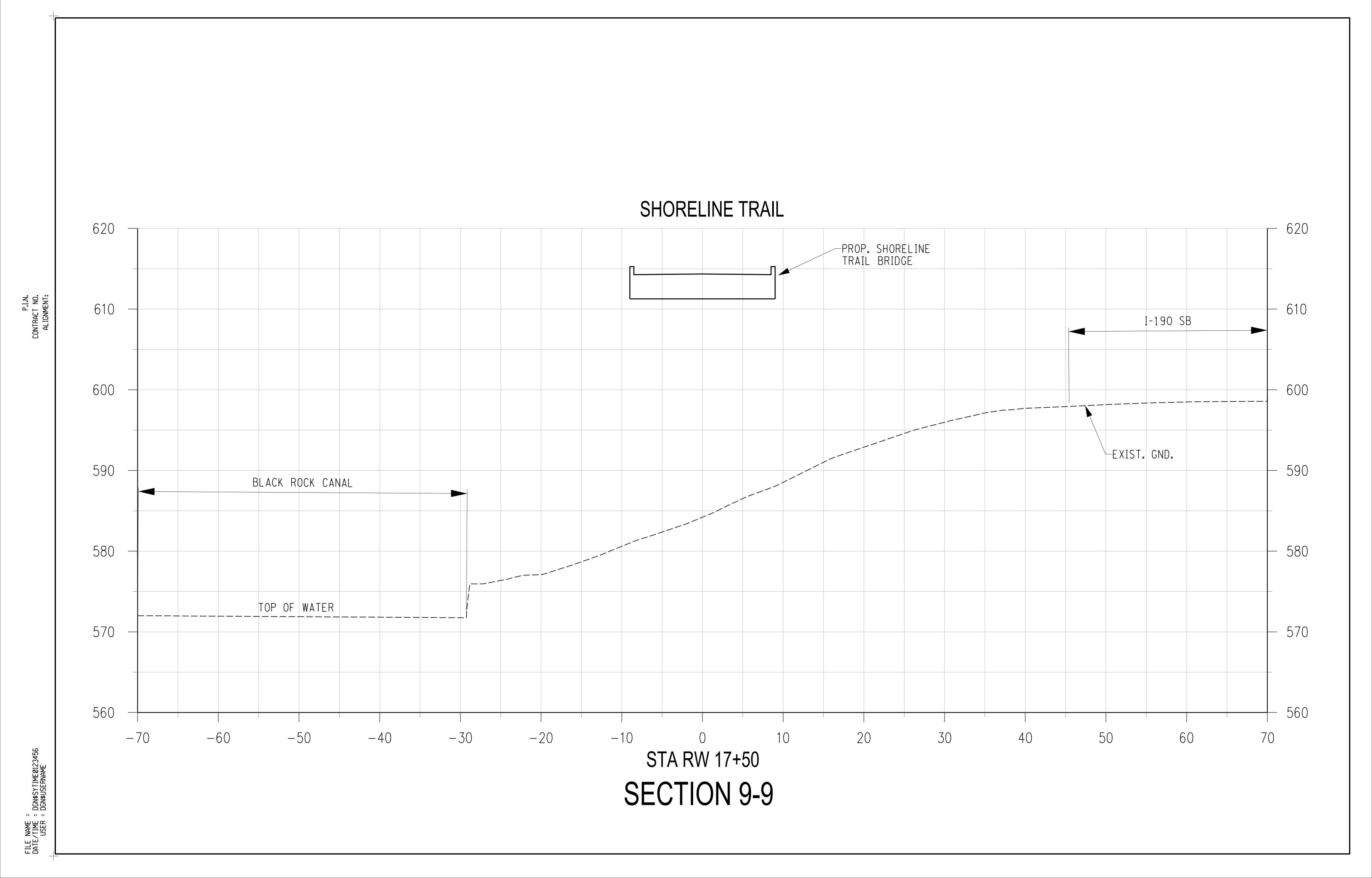












6. Non-Standard Feature Justification

	NON		ARD FEATURE J ordance with <u>HI</u>			
PIN:	5760.80	5760.80 NHS (Y/N): Yes		Yes		
Route No. & Name:			oan Principal Arterial Interstate			
Project Type:	Project Type: Reconstruction Design Class: Ramp (Diagonal)			Ramp (Diagonal)		
% Trucks:	3%		Terr	ain:		Rolling
ADT: 8000 Truck Access/Qualifying Hwy. Qualifying Highway		Qualifying Highway				
- Description of N	on-Standard Featu	ıre				
Type of Feature curve radius):	(e.g., horizontal	Level of	Service (LOS)			
Location:		From th	e approach to Ra	amp P to I-190 N	B.	
Standard Value	•	С		Design Speed:		35 mph
Existing Value:		E		Advisory Speed		Not posted ≤ 30 mp
Proposed Value		F		Advisory Speed	:	35 mph
- Accident Analysi	s					
Current Accider			1.07 Acc/mvm			
Anticipated Accident Nates,			1.19 Ac	c/mvm		
			N	0		
		The accident rates identified are for I-190NB north of the ramp location These rates do not have any bearing on the LOS for Ramp P.				
- Cost Estimates						
Cost to Fully Meet Standards: Cost(s) For Incremental Improvements: Cost to add capacity to I-190 would exceed \$100 M. Adding addition capacity would require the partial replacement of the Peace Bridge the relocation of the City of Buffalo pump station. None		f the Peace Bridge and				
- Mitigation (e.g.,	increased superel	evation a	and speed chang	e lane length for	r a non-s	tandard ramp radius)
None.						
- Compatibility wi	th Adjacent Segm	ents & Fu	iture Plans:			
improvements a modifications fo	it the I-190 NB ent	rance ran ired to me	np and the Front eet the geometri	Park entrance in	ntersecti	ilitate intersection ons. Slight alignment ect. The LOS for Ramp
- Other Factors (e.	g., Social, Econom	ic & Envi	ronmental):			
Any modification within the park.	ns to Ramp P to im	prove the	e level of service	would require a	dditiona	I ROW be taken from
Proposed Treatn	nent (i.e., Recomn	nendatio	n):			
				OS of Ramp P an	d that it	be constructed as

proposed.

NON-STANDARD FEATURE JUSTIFICATION (in accordance with HDM §2.8) 60.80 NHS (Y/N):

PIN:	5760.80	NHS (Y/N):	Yes
Route No. & Name:	I-190	Functional Class:	Urban Principal Arterial Other
Project Type:	Reconstruction	Design Class:	Interstate
% Trucks:	8%	Terrain:	Rolling
ADT:	111200	Truck Access/Qualifying Hwy.	Qualifying Highway

a. - Description of Non-Standard Feature

Type of Feature (e.g., horizontal curve radius):	Vertical Clearance		
Location:	Underneath Ramp B (BII	N 1063110) along the I-19	0 NB travel lanes.
Standard Value:	16.00 ft. (min.)	Design Speed:	60 mph
Existing Value:	14.53 ft.	Advisory Speed:	60 mph
Proposed Value	14 53 ft	Advisory Speed:	60 mnh

b. - Accident Analysis

Current Accident Rate:	1.07 (NB), 0.74 (SB) Acc/mvm
Statewide Rate:	1.19 (NB/SB) Acc/mvm
Is the non-standard feature a contributing factor?	No
Anticipated Accident Rates,	The accident rates identified are for I-190 nort

The accident rates identified are for I-190 north of Interchange 9 location. These rates do not have any bearing on the non-standard vertical clearance of Ramp B over the I-190.

c. - Cost Estimates

Severity, and Costs:

Cost to Fully Meet Standards:	\$5 M (structure replacement only)
Cost(s) For Incremental	None
Improvements:	

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

None.

e. - Compatibility with Adjacent Segments & Future Plans:

None.

f. - Other Factors (e.g., Social, Economic & Environmental):

None.

g. - Proposed Treatment (i.e., Recommendation):

Ramp B to remain as-is. Ramp B (BIN 1063110) is on the approved structures list found in Appendix 2C of the NYSDOT Bridge Manual. Structures contained in this table can retain existing vertical clearance as agreed by the FHWA on December 12, 1991.

PIN: 5760.80 NHS (Y/N): Route No. & I-190 Functional Class: Project Type: Reconstruction Design Class: % Trucks: 8% Terrain: ADT: 111200 Truck Access/Qualifying Hwy		Yes n Principal Arterial Interstate Interstate Rolling alifying Highway		
Name: Project Type: Reconstruction Design Class: % Trucks: 8% Terrain: ADT: 1-190 Functional Class: Functional Class: Terrain: Truck Access/Qualifying Hwy		Interstate Interstate Rolling		
% Trucks: 8% Terrain: ADT: 111200 Truck Access/Qualifying Hwy	. Qu	Rolling		
ADT: 111200 Truck Access/Qualifying Hwy	. Qu			
	. Qu	alifying Highway		
ı Description of Non-Standard Feature				
Type of Feature (e.g., horizontal curve radius): Shoulder Width Mainline and Shoulder Width on bridges (i.e. Bridge	width)			
Location: Right and Left shoulders along I-190 N	B and SB (inc	c. shoulder on bridges		
Standard Value: LT-4.0 ft., RT-10.0 ft. Design Spee		60 mph		
Existing Value: LT-Varies: 2.6-4.3 ft. Advisory Spe		60 mph		
RT-Varies: 7.9-10.5 ft.				
Proposed Value: LT-Varies: 2.6-4.3 ft. Advisory Special RT-Varies: 7.9-10.5 ft.	ed:	60 mph		
o Accident Analysis				
Current Accident Rate: 1.26/1.07Acc/mvm I-190 NB S/N of I	1.26/1.07Acc/mvm I-190 NB S/N of Interchange 9 0.83/0.74 Acc/mvm I-190 SB S/N of Interchange 9			
Statewide Rate: 1.29/1.19 Acc/mvm I-190 NB/SB, S/N	of Interchan	ge 9		
Is the non-standard feature a No				
contributing factor? The accident rates identified are for I-	L90 NB and S	SB of Interchange 9.		
Anticipated Accident Rates, Severity, and Costs: The anticipated accident rate and sev		_		
a Cost Estimates				
Cost to Fully Meet Standards: Cost to add standard shoulders along		=		
	structures would exceed \$100 M. This would require partial replacement of the Peace Bridge.			
The benefit is limited.				
I Mitigation (e.g., increased superelevation and speed change lane length	for a non-sta	andard ramp radius):		
None.		p. 1		
e Compatibility with Adjacent Segments & Future Plans:				
Feature is consistent with other nearby sections of this interstate and is r	ot expected	to affect future		
transportation plans.				
f Other Factors (e.g., Social, Economic & Environmental):				
Reconstruction of the I-190 travel-way is not included in the scope of this narrow corridor and pavement widening options are limited by adjacent		e existing facility is in a		
g Proposed Treatment (i.e., Recommendation):				
I-190 to remain as-is.				
1				

NON-STANDARD FEATURE JUSTIFICATION (in accordance with <u>HDM §2.8</u>)

PIN:	5760.80	NHS (Y/N):	No
Route No. & Name:	Ramp N	Functional Class:	Urban Principal Arterial Other
Project Type:	Reconstruction	Design Class:	Ramp (Direct Connection)
% Trucks:	14%	Terrain:	Rolling
ADT:	22800	Truck Access/Qualifying Hwv.	Qualifying Highway

a. - Description of Non-Standard Feature

Type of Feature (e.g., horizontal curve radius):	Vertical Clearance		
Location:	Underneath Ramp P (BII	N 5512570)	
Standard Value:	16.00 ft. (min.)	Design Speed:	35 mph
Existing Value:	15.42 ft.	Advisory Speed:	35 mph
Proposed Value	15 42 ft	Advisory Speed	35 mnh

b. - Accident Analysis

Current Accident Rate:	1.26 Acc/mvm
Statewide Rate:	1.29 Acc/mvm
Is the non-standard feature a contributing factor?	No
Anticipated Accident Rates,	The accident rates identified are for I-190NB sout

Anticipated Accident Rates,
Severity, and Costs:

The accident rates identified are for I-190NB south of the Ramp P location. These rates do not have any bearing on the non-standard vertical clearance of Ramp P over Ramp N.

c. - Cost Estimates

Cost to Fully Meet Standards:	\$1.5 M (structure replacement only)
Cost(s) For Incremental	None.
Improvements:	

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

None.

e. - Compatibility with Adjacent Segments & Future Plans:

The Porter Ave. bridge over the I-190 located immediately before this structure has a vertical clearance ≥ 16′-0″.

f. - Other Factors (e.g., Social, Economic & Environmental):

Raising the Ramp P profile to increase the vertical clearance may result in impacts to Front Park.

g. - Proposed Treatment (i.e., Recommendation):

Ramp P to remain as-is. Ramp P (BIN 5512570) is on the approved structures list found in Appendix 2C of the NYSDOT Bridge Manual. Structures contained in this table can retain existing vertical clearance as agreed by the FHWA on December 12, 1991.

	NON		ARD FEATURE J rdance with <u>H</u>	USTIFICATION DM §2.8)			
PIN:	5760.80		NHS ((Y/N):		Υ	'es
Route No. & Name:	I-190		Function	nal Class:	Urb		cipal Arterial rstate
Project Type:	Reconstruct	ion	Design	Class:		Inte	rstate
% Trucks:	8%		Terr	ain:		Ro	lling
ADT:	111200		Truck Access/0	Qualifying Hwy.	Q	ualifyin	g Highway
- Description of N	on-Standard Featu	ıre					
Type of Feature curve radius):	e (e.g., horizontal	Level of	Service (LOS)				
Location:		I-190 NE	3 and SB				
Standard Value	:	D (min.)		Design Speed:		60 mp	oh
Existing Value:		D (NB),		Advisory Speed	d:	60 mp	
Proposed Value	: :	F (NB), F	(SB)	Advisory Speed	l:	60 mp	oh .
Accident Analysi	is						
Current Accider	1.26/ 0.83/		.26/1.07Acc/mvm I-190 NB S/N of Interchange 9 .83/0.74 Acc/mvm I-190 SB S/N of Interchange 9				
Statewide Rates		1.29/1.19 Acc/mvm I-190 NB/SB, S/N of Interchange 9					
Is the non-standard feature a contributing factor?				No			
Anticipated Accident Rates.				ified are for I-19			e anticipated
Severity, and Co		accident	t rate and severi	ty are not expect	ted to ch	ange.	
- Cost Estimates							
Cost to Fully Me Cost(s) For Incre Improvements:	emental	capacity	would require t	-190 would exce the partial replac y of Buffalo pum	ement of	f the Pe	_
Mitigation (e.g.,	increased superel		and speed chang	e lane length fo	r a non-s	tandard	d ramp radius):
None.				, comment of the second			
Compatibility wi	th Adjacent Segm	ents & Fu	ture Plans:				
Feature is consistransportation p	stent with other no plans.	earby sect	tions of this inte	rstate and is not	expected	to affe	ect future
- Other Factors (e.	g., Social, Econom	ic & Envi	ronmental):				
	of the I-190 travel- and pavement wid					e existi	ing facility is in a
- Proposed Treatn	nent (i.e., Recomn	nendatio	n):				

	NON		ARD FEATURE JUING INC. INC. INC. INC. INC. INC. INC. INC.				
PIN:	5760.80		NHS (Y/	N):		Υ	'es
Route No. & Name:	I-190		Functional	Class:	Urb		cipal Arterial rstate
Project Type:	Reconstruct	ion	Design C	lass:		Inte	rstate
% Trucks:	8%		Terrai	n:		Ro	lling
ADT:	111200		Truck Access/Qua	alifying Hwy.	Q	ualifyin	g Highway
a Description of N	on-Standard Featu	ıre					
Type of Feature curve radius):	e (e.g., horizontal	Horizon	tal Clearance				
Location:		I-190 NB adjacent to Ramp P and along I-190 NB/SB					
Standard Value:			o barrier.	Design Speed: 60 r		60 mp	h
			of shoulder				
Existing Value:			r 4 ft. w/ barrier. w/o barrier	Advisory Spe	and:	60 mp	.h
Laisting value.			≥ 3.5 ft. w/ barrier		eu.	υστηρ	/II
Proposed Value	:		w/o barrier	Advisory Speed:		60 m	ph
·		≥ 3.5 ft.	w/ barrier	, , , , , , , , , , , , , , , , , , , ,			
b Accident Analysi	is						
Current Accider	nt Rate:		07Acc/mvm I-190		_		
			74 Acc/mvm I-190				
Statewide Rate:		1.29/1.19 Acc/mvm I-190 NB/SB, S/N of Interchange 9					
Is the non-standard feature a contributing factor?		No					
Anticipated Acc		The acci	dent rates identific	ed are for I-19	0 NB and	SB. The	e anticipated
Severity, and Co		accident rate and severity are not expected to change.					
c Cost Estimates							
Cost to Fully Me	eet Standards:	Cost to	add capacity to I-19	90 would exce	ed \$100	M. Incr	easing the
Cost(s) For Incre			tal clearance along				_
luna in man, co una a inches.		1	aaaa Duidaa				

Improvements: of the Peace Bridge.

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

e. - Compatibility with Adjacent Segments & Future Plans:

Feature is consistent with other nearby sections of this interstate and is not expected to affect future transportation plans.

f. - Other Factors (e.g., Social, Economic & Environmental):

Reconstruction of the I-190 travel-way is not included in the scope of this project. The existing facility is in a narrow corridor and pavement widening options are limited by adjacent features.

g. - Proposed Treatment (i.e., Recommendation):

I-190 to remain as-is.

NON-STANDARD FEATURE JUSTIFICATION (in accordance with HDM §2.8)			
F760.90	NUIC (V/NI).		

PIN:	5760.80	NHS (Y/N):	No
Route No. & Name:	Porter Ave.	Functional Class:	Urban Principal Arterial Other
Project Type:	Reconstruction	Design Class:	Urban Arterial
% Trucks:	3%	Terrain:	Rolling
ADT:	16000	Truck Access/Qualifying Hwy.	Within 1 mile of Qualifying Highway

a. - Description of Non-Standard Feature

Type of Feature (e.g., horizontal **Travel Lane Widths** curve radius): From the east approach of the I-190 overpass to the Busti Avenue Location: intersection. 12 ft. (Travel lane) Standard Value: Design Speed: 30 mph Existing Value: 10 ft. (Travel lane) Advisory Speed: 30 mph Proposed Value: 10 ft. (Travel lane) Advisory Speed: 30 mph

b. - Accident Analysis

Cost(s) For Incremental

Improvements:

Current Accident Rate:	16.44 Acc/mvm		
Statewide Rate:	4.86 Acc/mvm		
Is the non-standard feature a contributing factor?	No		
Anticipated Accident Rates,	Sideswipes contributed to only 1% of the total number of accidents on		
Severity, and Costs:	Porter Avenue and		
- Cost Estimates			
Cost to Fully Meet Standards:	\$450,000		

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

None

Maintain pavement widths as they exist today. This portion of Porter Avenue lies within a recently completed project that was facilitated by the City of Buffalo. This project consisted of curb replacement, pavement reconstruction/overlay and signal upgrades.

e. - Compatibility with Adjacent Segments & Future Plans:

This project consists of minor improvements along the Porter Avenue corridor to facilitate intersection improvements at the I-190 NB entrance ramp and the Front Park entrance intersections. The existing Porter Avenue lane widths and curb lines will be maintained.

f. - Other Factors (e.g., Social, Economic & Environmental):

Both Front Park and Porter Avenue are listed in the National Register as contributing resources of the Olmsted Parks and Parkways Thematic Resources and are also elements of the NRHP listed Delaware Park Front Park System (90NR01212).

Increasing the roadway pavement width would require the relocation of the existing closed drainage system, the relocation of the above ground utilities (light poles and hydrants) and the purchase of right-of-way along the south side of Porter Avenue.

g. - Proposed Treatment (i.e., Recommendation):

It is recommended that Porter Avenue lane widths be maintained within the project corridor.

NON-STANDARD FEATURE JUSTIFICATION (in accordance with HDM §2.8)

PIN:	5760.80	NHS (Y/N):	No
Route No. & Name:	Porter Ave.	Functional Class:	Urban Principal Arterial Other
Project Type:	Reconstruction	Design Class:	Urban Arterial
% Trucks:	3%	Terrain:	Rolling
ADT:	16000	Truck Access/Qualifying Hwy.	Within 1 mile of Qualifying Highway

a. - Description of Non-Standard Feature

Type of Feature (e.g., horizontal curve radius):	Vertical Clearance		
Location:	Under the Porter Avenu	e bridge (BIN 5512560) o	ver CSX.
Standard Value:	22.00 ft.	Design Speed:	30 mph
Existing Value:	17.89 ft.	Advisory Speed:	30 mph
Proposed Value:	20.00 ft.	Advisory Speed:	30 mph

. - Accident Analysis

Accident Analysis		
Current Accident Rate:	NA	
Statewide Rate:	NA	
Is the non-standard feature a	No	
contributing factor? Anticipated Accident Rates, Severity, and Costs:	NA	

c. - Cost Estimates

Cost to Fully Meet Standards:	\$2.3 M
Cost(s) For Incremental	\$0.6 M (provide 20 ft. CSX clearance)
Improvements:	\$1.2 M (provide 21 ft. CSX clearance)

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

The Porter Avenue Bridge is currently slated to be replaced to provide a 20 ft. minimum clearance. As part of the agreement with CSX, the proposed foundations will be designed to facilitate future lowering of the CSX track. The span over I-190 NB will be lengthen to provide adequate outside shoulder offset thus alleviating this current non-standard feature.

e. - Compatibility with Adjacent Segments & Future Plans:

As mentioned in the previous section, the proposed bridge will be designed to allow for future plans for track lowering along this segment of CSX through Buffalo. The clearance exceeds the limited clearance on the I-190 overpass bridge (BIN 5512589) that is located approximately 1/3 mile north of this structure.

f. - Other Factors (e.g., Social, Economic & Environmental):

To meet current vertical clearance requirements, the low chord elevation will need to be raised approximately 4 ft. and would require extensive approach adjustments. Due to close proximity of the I-190 ramps, proposed Peace Bridge Ramp, and driveways, these elements would need to be reconstructed and brought up to current design standards. Since there is already limited clearance on the Ramp P over Ramp N bridge and the maximum grade required on the Peace Bridge Plaza entrance ramp (Ramp PN) to tie-in Ramp N, raising Porter Avenue through this section would require the additional replacement of this structure (Ramp P over Ramp N).

g. - Proposed Treatment (i.e., Recommendation):

It is recommended with concurrence with CSX that the replacement of the Porter Avenue overpass bridge be raised to provide a 20 ft. minimum clearance. This recommendation requires a clearance variance from CSX.

NON-STANDARD FEATURE JUSTIFICATION (in accordance with <u>HDM §2.8</u>)				
PIN:	5760.80	NHS (Y/N):	Yes	
Route No. & Name:	I-190	Functional Class:	Urban Principal Arterial Interstate	
Project Type:	Reconstruction	Design Class:	Interstate	
% Trucks:	8%	Terrain:	Rolling	
ADT:	111200	Truck Access/Qualifying Hwy.	Qualifying Highway	

a.- Description of Non-Standard Feature

Type of Feature (e.g., horizontal curve radius):	Vertical Clearance		
Location:	Under I-190 bridge BIN 5	551259 over CSX.	
Standard Value:	22.0 ft.	Design Speed:	60 mph
Existing Value:	17.25 ft.	Advisory Speed:	60 mph
Proposed Value:	17.25	Advisory Speed:	60 mph

b. - Accident Analysis

Anticipated Accident Rates,

Severity, and Costs:

Current Accident Rate:	1.07 Acc/mvm (I-190 NB)
	0.74 Acc/mvm (I-190 SB)
Statewide Rate:	1.19 Acc/mvm (I-190 NB/SB)
Is the non-standard feature a	No
contributing factor?	The accident rates identified are for L100. These

The accident rates identified are for I-190. These rates do not have any bearing on the non-standard clearance under CSX.

c. - Cost Estimates

Cost to Fully Meet Standards:	\$4.5 M (structure only)
Cost(s) For Incremental	None.
Improvements:	

d. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

This structure is located within the project corridor but is not slated for rehabilitation/replacement under this contract.

e. - Compatibility with Adjacent Segments & Future Plans:

In order to meet the clearance requirements over CSX, the bridge would have to be raised approximately 5 ft. thus requiring extensive approach work on the I-190 mainline including the replacement of the Ramp B bridge and the I-190 over Pump Station Access Road bridge. This additional associated work would increase the construction costs substantially and would adversely affect the operations of the Peace Bridge during construction.

f. - Other Factors (e.g., Social, Economic & Environmental):

Both Front Park and Porter Avenue are listed in the National Register as contributing resources of the Olmsted Parks and Parkways Thematic Resources and are also elements of the NRHP listed Delaware Park Front Park System (90NR01212). Increasing the clearance of Ramp B would adversely impact this environmental resource.

g. - Proposed Treatment (i.e., Recommendation):

It is recommended that the existing I-190 over CSX remain as-is. Replacement of this structure shall not be included in this construction project and has already received a clearance waiver/variance from CSX.

NON-STANDARD FEATURE JUSTIFICATION (in accordance with <u>HDM §2.8</u>)

PIN:	5760.80	NHS (Y/N):	No
Route No. & Name:	Ramp N (extension)	Functional Class:	Urban Principal Arterial Other
Project Type:	Reconstruction	Design Class:	Free Flowing Turning Roadway
% Trucks:		Terrain:	Rolling
ADT:		Truck Access/Qualifying Hwy.	Qualifying Highway

h. - Description of Non-Standard Feature

Type of Feature (e.g., horizontal curve radius):	Shoulder Width		
Location:	Ramp N (extension)		
Standard Value:	LT – 3.0 ft.; RT – 6.0 ft.	Design Speed:	30 mph
Existing Value:	LT – varies 0 to 10 ft.	Advisory Speed:	30 mph
	RT – varies 4 to 13 ft.		
Proposed Value:	LT – varies 2 to 4 ft.	Advisory Speed:	30 mph
	RT – varies 2 to 4 ft.		

i. - Accident Analysis

Current Accident Rate:	1.07 Acc/mvm (I-190 NB)
	0.74 Acc/mvm (I-190 SB)
Statewide Rate:	1.19 Acc/mvm (I-190 NB/SB)
Is the non-standard feature a contributing factor?	No
Anticipated Accident Rates,	The accident rates identified are for I-190. These rates do

i. - Cost Estimates

Severity, and Costs:

ost Estimates	
Cost to Fully Meet Standards:	\$5 M (Complex structure, retaining wall replacement along Ramp S and
Cost(s) For Incremental	reconstruction of Ramp S)
Improvements:	None.

bearing on the non-standard shoulder width on Ramp N (extension).

k. - Mitigation (e.g., increased superelevation and speed change lane length for a non-standard ramp radius):

None.

I. - Compatibility with Adjacent Segments & Future Plans:

The proposed shoulder configuration is consist with the conditions that exist today and is not expected to affect future transportation plans.

m. - Other Factors (e.g., Social, Economic & Environmental):

The widening of Ramp N (extension) is limited by the close proximity of Ramp C, Peace Bridge Plaza, Ramp D and Ramp SN.

n. - Proposed Treatment (i.e., Recommendation):

It is recommended that the proposed Ramp N (extension) shoulders be constructed as shown on the plans.

	NON-		RD FEATURE J lance with <u>HI</u>	USTIFICATION DM §2.8)		
PIN:	5760.80		NHS (Y/N):		Yes
Route No. & Name:	Ramp D		Function			Principal Arterial Interstate
Project Type:	Reconstructi	ion	Design	Class:		Ramp
% Trucks:	none		Terrain:			Rolling
ADT:	N/A		ruck Access/C	Qualifying Hwy.	Qual	lifying Highway
Description of No	n-Standard Featu	re				
Type of Feature curve radius):	(e.g., horizontal	Access Cor	ntrol			
Location:		At the ter	minus of Ram	p D (pump station	access)	
Standard Value:		No Access	.	Design Speed:	3!	5 mph
Existing Value:			reak in ROW)	Advisory Speed:		5 mph
Proposed Value:		Access (br	reak in ROW)	Advisory Speed:	3!	5 mph
Accident Analysis	5					
Current Acciden	t Rate:		N/A			
Control de Deter		N/A				
Statewide Rate:		N/A				
Is the non-standard feature a contributing factor?		Due to the	low volume c	of vehicles that acc	ess the pu	ump station, no
Anticipated Acci		effect is ar			-	•
Severity, and Co						
Cost Estimates						
Cost to Fully Me	et Standards:	>\$10 M (re	elocate pump s	station)		
_ , , _ :		None.				
l Mitigation (e.g., i	increased superel	evation and	d speed chang	e lane length for a	non-star	ndard ramp radiu
As part of the NY	Gateway Project	, an additio	nal access to tl	he pump station w	ill be prov	vided from Porter
Avenue. The exi	sting access from	the I-190/R	amp D will be	limited to mainten	ance and	delivery vehicles
Compatibility wit	th Adjacent Segm	ents & Futu	ire Plans:			
This access breal	k has existed since	the origina	al construction	of the I-190.		
Other Factors (e.g	g., Social, Econom	ic & Enviro	nmental):			
	mp station for ma Railroad tracks, th		· · · · · · · · · · · · · · · · · · ·	hicles from other l -190.	ocations i	is limited by the a
Dunnand Tunks	nent (i.e., Recomm	nendation):				

	Route	description	Existing	Retained	New
		Shoulder Width			
1	I-190	Bridge Width (shoulders)	Х	Х	
2	I-190	Horizontal Clearance	Х	Х	
3	I-190	Vertical Clearance (Ramp B)	Х	Х	
4	I-190	LOS	Х	Х	
5	Ramp N	Shoulder Width	Х		
6	Ramp N	Vertical Clearance	Х	Х	
7	Ramp N	Horizontal Clearance	Х		
8	Ramp N	LOS	X		
9	Ramp N ext.	Vertical Clearance (@Ramp B)	Х		
10	Ramp N ext.	Shoulder Width	Х	Х	
11	Ramp N ext.	Horizontal Clearance	Х		
	Ramp N ext.	LOS - Include in Ramp N LOS above			
12	Ramp C	Shoulder Width	Х		
13	Ramp C	Horizontal Clearance	Х		
14	Ramp D	Vertical Clearance (CSX)			
15	Ramp D	Access Control	Х	Х	
16	Ramp P	Superelevation	Х		
17	Ramp P	LOS	Х	Х	
18	Porter Ave	Travel Lane Width	Х	Х	
19	CSX	Vertical Clearance (I-190)	Х	Х	
20	CSX	Vertical Clearance (Porter Ave.)	Х	Х	
21					
		Total Existing NS features	19		
		Total Existing NS features Retained in Prop.		11	
		New NS Features			0
		Existing NS Features Eliminated (D - E)	8		
		Total NS features in Proposed E + F	11		